Advant® OCS
with Master software

Data Base Elements
Advant® Controller 400 Series

Reference Manual

3BSE 014 819R301

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WARNING Hazards which could result in personal injury

CAUTION Hazards which could result in equipment or property damage

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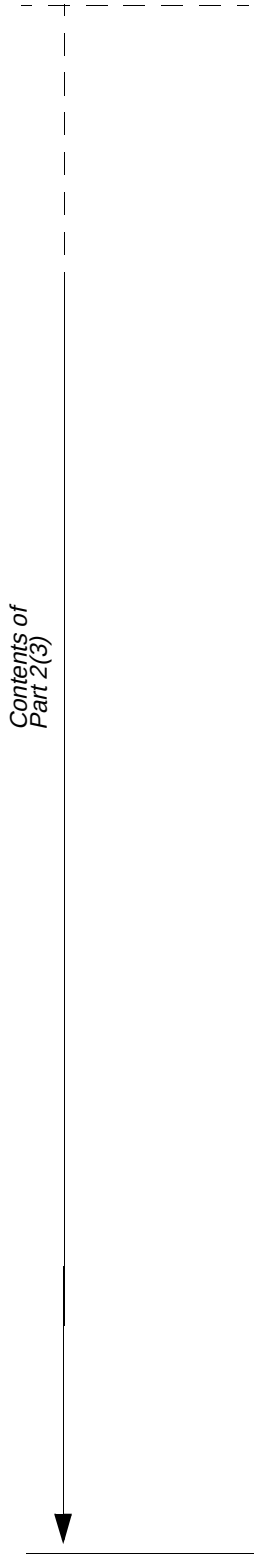
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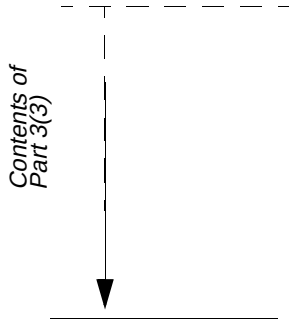


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Introduction

This chapter is an introduction to data sheets for data base elements in Advant Controller 400 Series.

Terminology

The term Advant Controller 400 Series is used for Advant Controller 410 and Advant Controller 450.

The term Advant Station 500 Series is used for Advant Station 500 Series Engineering Stations and Advant Station 500 Series Operator Stations.

The term Engineering Station is used for Advant Station 100 Series Engineering Station and Advant Station 500 Series Engineering Station.

The term DB or data base is used for the Advant Controller 400 Series data base.

Overview

Advant Controller 400 Series is used for controlling of industrial processes. The system provides the AMPL programming language and a data base element concept for controlling the process.

The data base elements provide a software concept to view and modify the data base contents of Advant Controller 400 Series.

The data base has the dual purpose of storing process and control data permanently and of transferring data between programs and systems. The data base has a structure suitable for easy access of the data.

At delivery, the data base of Advant Controller 400 Series is empty. Following dimensioning the user can easily feed the needed values into the data base, obtaining the proper data base structure.

Each group of data in the data base is grouped into a data base element. Each data base element contains the information necessary for a complete function, such as an analog input signal or printer set-up data.

Data Sheets for Data Base Elements

This reference manual contains the data sheets for all data base elements available for Advant Controller 400 Series.

You can use the information in the data sheets for two purposes:

1. To interpret the meaning of the data viewed in element pictures on the Engineering Station.
2. To check available data types, values and ranges for your modifications of the element contents, and how these modifications affect the control and the signal processing of the system.

To be able to manipulate the contents of the data base you also have to know the appropriate commands to be used. These commands are described in the manual *AdvaBuild On-line Builder Reference Manual* or *AMPL Configuration Advant Controller 400 Series User's Guide*.

Contents of a Data Sheet for Data Base Elements

Head of the Data Sheet

The head of a data sheet shows in the upper right corner the call name of the element and in the upper left corner the data base element type.



Figure 1. Example of Head

Summary

The summary provides a brief description of the element.

Picture

Each element has a graphic symbol. For simple elements it consists of a header and a body. For complex elements the body is divided into several segments or windows that can be expanded. Segments have a title and are numbered S1, S2.... Sn.

In each symbol you will find terminals representing the data values. Inputs are shown to the left and outputs to the right. The names inside the picture are terminal names to identify the data and to connect PC elements to data base elements (value is default when connecting). Just outside the graph the internal number of the data (terminal number) is given.

The data content is given at the outside edges of the picture. It is in user form and will be converted before being stored in the data base.

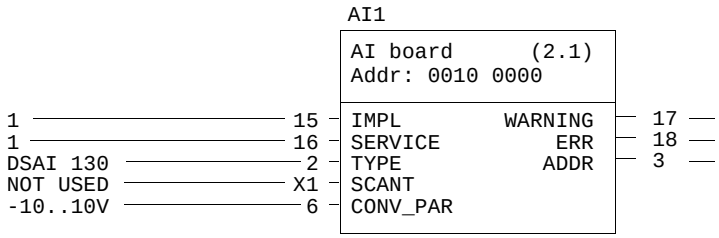


Figure 2. Symbol of a Simple Data Base Element

Overview Picture

For more complex data base elements with several segments an overview picture of all segments is included.

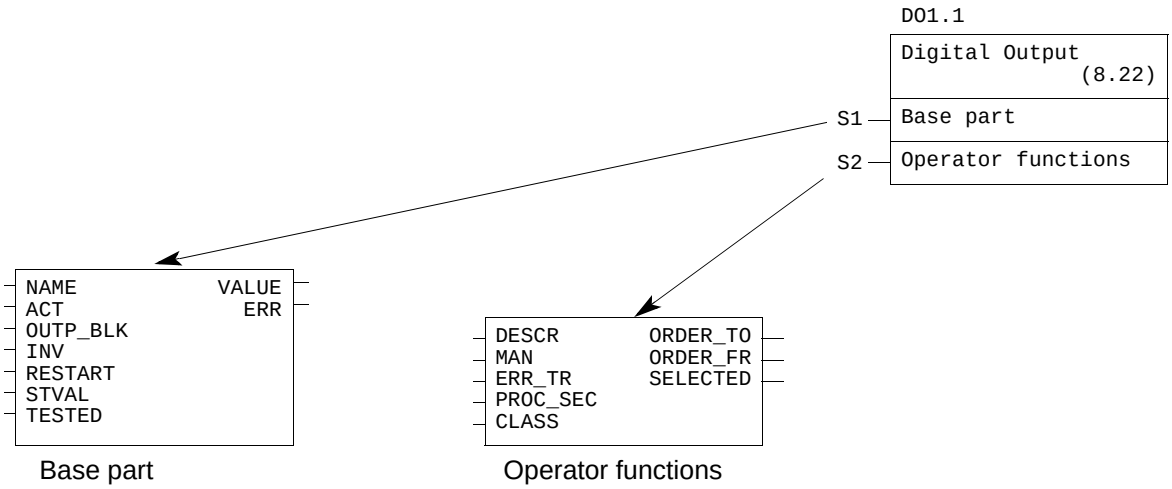


Figure 3. Example of an Overview Picture of a Complex Data Base Element

Description of Hardware Function

For a board or module data base element the data sheet is followed by a brief functional description.

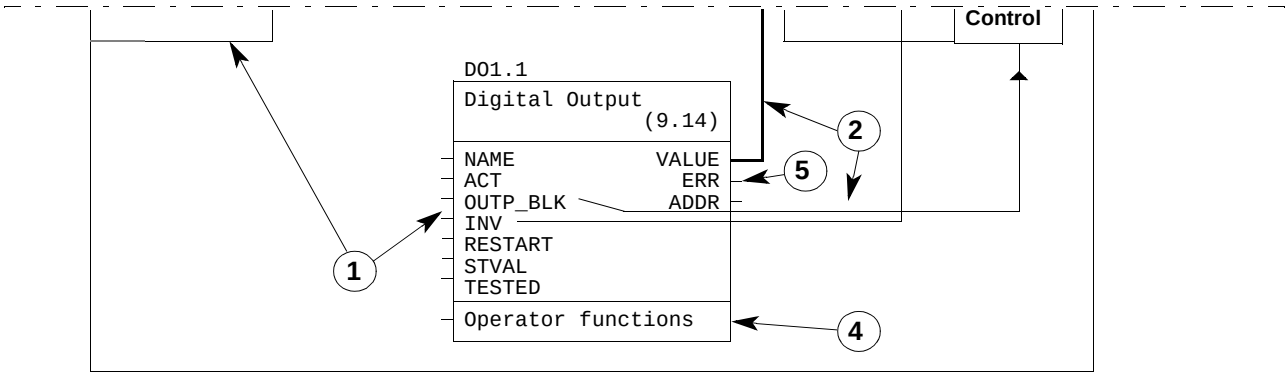
Board Set-up Procedure

For board elements a detailed step-by-step description of the board set-up procedure follows the functional description.

When board type is selected in board elements the version designation is omitted. For example DSAI 133A is to be entered as DSAI_133.

Description of Signal Processing Control

On a signal element data sheet a description of the signal processing controlled by the contents of the data base element follows the presentation of the symbol and its segments. The same data sheet can also include a diagram illustration of how the data values in the element control the signal processing.



With the data base element you control the signal processing executed by the process communication program. You can also define the interface to the Advant Station 500 Series Operator Station system.

The signal processing includes:

1. Update request
2. Update of database ”VALUE”
3. Invertion
4. Operator Station functions.

Figure 4. Example of a Description of Signal Processing Control

Element Head

The call name is a short mnemonic for the element type. The call name usually does not have any parameters. A parenthesized ( ) call name indicates that the data base element cannot be created directly using the create function. Either the Data Base instance is created automatically together with another element (e.g., signal elements), or all possible instances are already in the data base and none can be deleted.

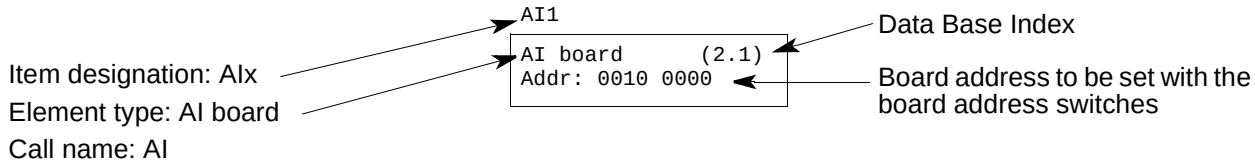


Figure 5. Example of an Element Head

Each element created is given an item designation that identifies it. For some elements the item designation equals the call name + the data base number. For other elements common item designations are used. A group of similar elements have the same item designations - see Table 1. The element AIx.y corresponds to channel number y (AI or TempPt(100)) of board (AI Board or Pt100 board) number x.

Most elements can also be given a unique user name allowing a second identifying method. The default user name for the element is the item designation.

The data base index (internal numbers to access data) can also be used to identify the element.

In board elements the address shows the setting of the address switches on the board. MSB: Address bit 7 is left; LSB: Address bit 0 is right.

Table 1. List of Element Types and Call Names

Element Type	**Call Name**
AAB File	AAB_FILE
Adaptive PID Ctrl	PIDCONA
AdvantFieldbus 100	CI520, CI522
AF 100 Station	AF100S
AI board	AI
AI Calculated	AIC
AI Event	AIEV
AI module	AI810, AI820, AI890, AI895
Analog Input (1)	AIS, AIXS, AIXRS, AIS810, AIS820, AIS89x
Analog Output (1)	AOS, AOXS, AOXRS, AOS810, AOS820, AOS890
AO board	AO

Table 1. List of Element Types and Call Names (Continued)

Element Type	Call Name
AO Calculated	AOC
AO module	AO810, AO820, AO890, AO895
AX Redundant	AXR
AX unit	AX
Binary Control	GENBIN
BM (1)	BM
Boolean Data	DAT(B)
Clock Synch (1)	CLOCKSYNCH
Controller	AC70
Controller	AC110
Controller (1)	AC410, AC450
CV unit	CV
Data Set Descr	DS
DataSet Peripheral	DSP
DCU unit (2)	DCU
DI board	DI
DI Calculated	DIC
DI module	DI810, DI811, DI814, DI820, DI821, DI830, DI831, DI885, DI890
DI Event	DIEV
Digital Input (1)	DIS, DIXS, DIS810, DIS811, DIS814, DIS820, DIS821, DIS830, DIS831, DIS885
Digital Output (1)	DOS, DOXS, DOS810, DOS814, DOS815, DOS820, DOS821, DOS890
Display info	TERMDIS
DO board	DO
DO Calculated	DOC
DO module	DO810, DO814, DO815, DO820, DO821
DP module	DP820
DX unit	DX
Dyn. value point	TERMDYN(I), TERMDYN(IL), TERMDYN(R)
Engineered drive	DRIENG

Table 1. List of Element Types and Call Names (Continued)

Element Type	**Call Name**
Event Set (Receive)	EVS(R)
Event Treat (1) (3)	EVENT
ExCom (1)	CAPXCOM
FI board (2)	FI
Free prog. module	PU535
Gas Input (2)	GISI
GCOM	CI543
General info (1)	TERMGENA, TERMGENB
GI board (2)	GI
Group Alarm	GRPALARM
Group Member (1)	GRPMEMB
Integer Data	DAT(I)
IntegerLong Data	DAT(IL)
LONWORKS Network	LON
LONWORKS Channel	LONCHAN
LONWORKS Device	LONDEV
LONWORKS Event Treatment	LONEVTR
LONWORKS Multiple Input Variable	LONMNVI
LONWORKS Multiple References	LONMREF
LONWORKS Input Variable	LONNVI
LONWORKS Output Variable	LONNVO
Manual Station	MANSTN
MassMemory Des (2)	MM_DESCR
MasterFieldbus	CI570
MB300/GCOM	CS513
Misc Boards (1)	MISC
Module 500	M500
Motor Control	MOTCON
MVI	CI532, MVIMOD
MVI Channel	MVICHAN
MVI Data Block	MVB

Table 1. List of Element Types and Call Names (Continued)

Element Type	Call Name
MVI Data Set Descr	MS
MVI free prog.	CI535
MVI Node	MVINODE
NETWL (1)	NETWL
Node Description (2)	NODE_DESCR
NM (1)	NM
Normally Closed Det. (2)	FINC
Normally Open Det. (2)	FINO
OS Description (2)	OS_DESCR
PBS Description	PBSD
PI Controller	GENCON
PID Adaptation data (1)	PIDCONAZ
PID Controller	PIDCON
Printer (1)	CAPPRI
Processor Module (1)	PM150, PM511
PROFIBUS-DP	CI541
PROFIBUS Slave	PBS
Pt100 board	AIPT
Pulse board	PULSE
Pulse (1)	PULSES
PX unit	PX
Ratio Station	RATIOSTN
RCG Analog object (2)	RCGA
RCG Digital object (2)	RCGD
Real Data	DAT(R)
RS232 interface	CI531
RTD Input	AIS830
RTD module	AI830
S100 Bus Extender (1)	DSBC_174
S800 I/O Station	CI810, CI820

Table 1. List of Element Types and Call Names (Continued)

Element Type	Call Name
Sequence Control	SEQ
Smoke Detector (2)	FISM
Standard drive	DRISTD
Start (1)	START
String references	TERMREF
System SW prom (1)	MB510
Table Class	TBL_CLASS
Table Name (1)	TABLE
Table Parameter (1)	TBL_PARAM
TC board	AITC
TC Input	AIS835
TC module	AI835
Temp(Pt100) (1)	AIPTS
Term Parameters (1)	TERMPAR
Term strings	TERMSTR
Terminal (1)	CAPTERM
Text data	TEXT(20), TEXT(48), TEXT(72)
TEXT DataSet Descr	TS
Thermocouple (1)	AITCS
T_I DI board (2)	TIME_DI
Time info DI (1) (2)	TIME_DIS
TL (1)	TL
TTD Log descr	TTDLOG
TTD Var descr (1)	TTDVAR
TU (1)	TU
User Control	MMCX
User Defined Ctrl	GENUSD
Valve Control	VALVECON

(1) Cannot be created directly.
(2) BU specific element, not described in this manual.
(3) Included in the Advant Station 500 Series data base.

Terminal Description

The terminal description table presents detailed information concerning the properties of each data base element terminal.

Terminal Description

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	BRD_NAME	system	–	–	**B**oa**RD NAME** to be presented in a system status picture in Operator Station.	Max. 8 characters
3	IMPL	system	1	B(r)	**IMPL**emented determines if the information is to be displayed in Operator Station.	Board status is displayed only if IMPL=1.
4	ERR	system	–	B(r/w)	**ERR**or flag indicates non-functional board.	ERR=1 is presented as red square in the system status picture of Operator Station.

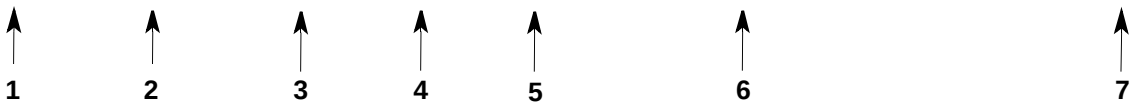


Figure 6. Example of Terminal Description

1. **Terminal number**.
2. **Terminal name**.

   Each available terminal in the element has its own terminal with a terminal name. The terminal name is unique within the element.
3. **Value entered by**.

   This column describes who initially sets the terminal value, and who is usually updating the value.

   user means that the value is specified by the user, that is entered by the Engineering Station. If the terminal has a default value, no value need to be entered at creation time. Otherwise a value is required.

   system. In case of input terminals of elements already present in the data base, the value is initialized by the Controller software. It depends on the access rights whether the value can be updated by the Engineering Station or not. All other cases are output terminals updated by the Controller software or a PC program. The value can normally not be updated by the Engineering Station.

   dialog means that the terminal has a default value, and is usually updated by the Operator Station software. It is ordinarily not used if no Operator Station system is connected. The value can also be updated by the Engineering Station.

predef means that the value of this terminal has been predetermined, and can not be changed by the user.

PC means that the value is usually updated by a PC element that is connected to this terminal.

4. **Default value**.
5. **PC connection data type**.

   If the PC program can read a data base terminal, this is indicated with ***(r)***. If it can read and write to it, this is indicated by ***(r/w)***. The data type is one of the following:

   B for Boolean

   I for Integer (16 bits)

   IL for IntegerLong (32 bits)

   R for Real

   G for Group data (specially adapted for certain PC terminals).

   An for Array of n characters

   Please note that if a PC program is connected to a data base point that is determined by e g dialog (Operator Station) or system, these values will write over each other.

   Certain parameter values included in a data base are updated each time the picture is presented on the screen. When such a parameter is controlled by PC, the picture shown will not be updated until the picture is changed or an event occurs in the object.
6. **Description**.

   A short description of the terminal.
7. **Remarks**.

   Short notes and limitations.

General Notes and Limitations

Name Limitations

The name of an element is initially the item designation. User entered names can be used to identify the element. Maximum name length is 20 characters except for some elements like DS and DAT that have a restriction to 12 characters.

The following characters can be used throughout the Advant System (see *AdvaCommand Basic Functions*, Section 5.1.5.9 Check for Valid Input): ’0’ - ’9’, ’a’ - ’z’, ’A’ - ’Z’, ’-’, ’_’, ’.’.

In addition the set of national characters is allowed. These characters are equivalent to the 7-bit ASCII characters ’@’, ’^’, ’[’, ’\’, ’]’, ’‘’, ’{’, ’|’, ’}’, ’~’.

The following characters can be used in Advant Controller 400 Series but they are not supported in Advant Station 500 Series OS: ’$’, ’%’, ’&’, ’?’, ’#’, ’*’.

Characters that cannot be used for names because of their special meaning are: space, ’<’, ’>’, ’=’, ’/’, ’:’, ’;’, ’!’, ’"’, ’(’, ’)’.

Names may not consist of only digits or digits and period.

Names that look like an item designation are not allowed, except the one valid, that is the name DIC4 is only allowed for the data base element with the item designation DIC4. The element with item designation DIC5, AIC3, PIDCON9 etc. cannot have the name DIC4.

Data base elements may not use names that ends with ”.Bxx”, ”.Ixx”, ”.ILxx”, and ”.Rxx” where xx are digits.

Operator Functions

Although available in the element, the Operator Functions part of the element picture contains no information that is used without an Operator or IMS Station.

Updating Element Values

The values shown in the element are those valid when the element was entered from the target to the On-line Builder, that is at command MDB or subcommand >> or <<. When a value is manually entered it is immediately copied to the target unless marked by an *. In that case values are copied when leaving the element, that is at subcommands END, >> or << after the validity has been checked.

The values are also updated by the commands RESTORE and GVD.

IMPL, SERVICE

IMPL and ACT can be set after system init. A board or module can temporarily be disabled using Operator Station dialog for IN-SERVICE or the data base element.

During system init, all boards or modules with IMPL=1 are included in the process communication tables to be scanned.

Primarily IN-SERVICE=0 can be used at system commissioning to block all signals of a board, and to save some CPU load. The board can then be activated without system init by setting IN-SERVICE=1.

In the SERVICE terminal you can read out the IN-SERVICE setting from Operator Station. The SERVICE-value can now be changed while the system is in operation mode.

Initializing a board or module includes resetting of LED, transferring of operation parameters and activation of interrupt handling. At system init all boards are initialized. A board or module that has been out-of-service can be re-initiated via Operator Station dialog or the data base element setting IN-SERVICE.

Allowed SCANT Values

All analog and digital outputs are scanned cyclically. The cyclicity is determined by the user and is entered as a value for the SCANT terminal of the current element.

For S100 I/O elements the user may choose interrupt controlled scanning by setting SCANT to INTERRUPT.

The following SCANT values are allowed:

Table 2. Allowed SCANT Values

Signal Type	Allowed SCANT Values																
	(IN=INTERRUPT, times in milliseconds)									(Times in seconds)							
	IN	10	20	40	50	100	200	250	500	1	2	5	10	30	60	300	600
DI S100 I/O (1)	X	X	X	X	X	X	X	X	X	X	X						
Pulse inputs S100 I/O (2)		X	X	X	X	X	X	X	X	X	X						
DI S400 I/O (1)		X	X	X	X	X	X	X	X	X	X						
DI S800 I/O (1)		X	X	X	X	X	X	X	X	X	X	X	X	X	X		
AI S100 I/O, except temperature mea–surement boards (2)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AI S100 I/O, tempe–rature measure-ment boards (2) (3)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AI S400 I/O (2)		X	X	X	X	X	X	X	X	X	X	X	X				
AI S800 I/O RTD S800 I/O TC S800 I/O (2)		X	X	X	X	X	X	X	X	X	X	X	X	X	X		

(1) SCANT determined for each board or module
(2) SCANT determined for each channel
(3) All indicated SCANT values are allowed but these boards have slower A/I converters than other AI boards. SCANT down to 200 ms can be used without difficulty in systems with a net frequency of 20-60 Hz and a 12-13 bit resolution requirement.

Address terminals BUS, STATION, POSITION and SUBPOS

The Advant Controller 400 Series can interface a large number of different objects, such as hardware modules, stations, controllers and I/O modules. The Advant Controller 400 Series can also be set up in a number of different configurations. Since the hardware modules, stations, controllers and I/O modules performs different functions and some of them can exist in multiple copies, there has to be a way to uniquely address one object.

Each *hardware module data base element* contain address terminals BUS, STATION, POSITION (or POS_I) to exactly specify the unique hardware module performing the function. Hardware modules to be inserted in a Carrier Modules or in a Processor Module additionally contain the SUBPOS (or SPOS_I) terminal.

S800 I/O module data base elements contain address terminals BUS, STATION and POSITION to specify the unique I/O module.

Other data base elements may contain a subset of the address terminals, such as BUS and STATION to specify a station, controller or unit instead of a hardware module.

The **BUS** terminal specifies on what communication link the object is located. A zero value specifies the Advant Controller 400 Series subrack. A non-zero value indicates that the object is connected to the Advant Controller 400 Series via a Communication Interface module.

The **STATION** terminal specifies a unique station, if the BUS contains more than one station. A zero value specifies the Advant Controller 400 Series subrack. A non-zero value specifies that the object is not inserted in the Advant Controller 400 Series subrack.

The **POSITION** (or **POS_I**) terminal specifies the position (physical slot) within the station specified by BUS and STATION.

The **SUBPOS** (or **SPOS_I**) terminal specifies the submodule position within a Carrier Module or Processor Module where the hardware module is inserted.

Please note that the address terminals **can not be modified** when the data base element is implemented (IMPL = 1) and the system is in operational mode.

See Figure 7 for an illustrated usage of address terminals in Advant Controller 450 data base elements.

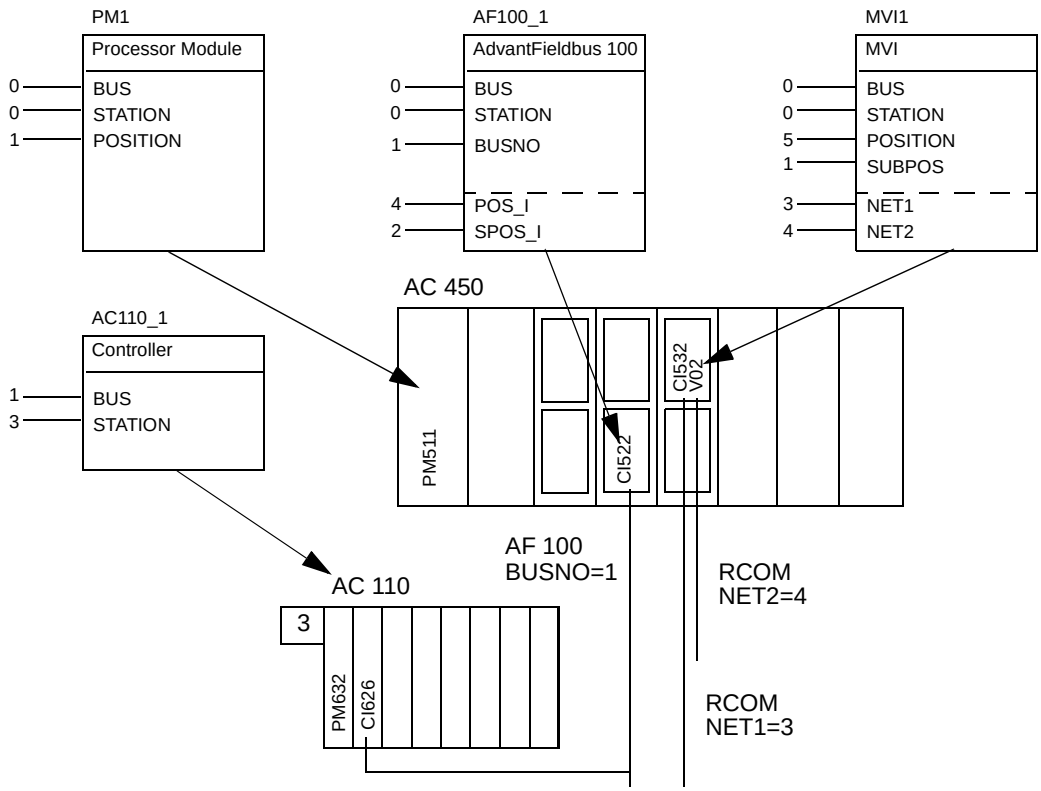


Figure 7. Example of Address Terminals Usage in Different Data Base Elements

Hardware Module Data Base Elements

Configuration of address terminals for hardware module data base elements in the Advant Controller 400 Series subrack is summarized in Table 3.

Table 3. Hardware Module Addresses in Advant Controller 400 Series Subrack

Type of Controller	BUS	STATION	POSITION or POS_I	SUBPOS or SPOS_I
Advant Controller 410	0	0	1	1, 2, 3 or 4
Advant Controller 450	0	0	1, 2, 3, …, 8 (RF520) or 1, 2, 3, ..., 14 (RF521)	1 or 2

S800 I/O module data base elements

The Advant Controller 400 Series interfaces S800 I/O stations and S800 I/O modules on Advant Fieldbus 100. The I/O modules have a **POSITION** terminal specifying the position from the Communication Interface module (for example CI810). The first module has position number one, the second I/O module position number two, and so on.

Configuration of address terminals for S800 I/O module data base elements in the Advant Controller 400 Series is summarized in Table 4.

Table 4. Valid Addresses in Advant Controller 400 Series

Type of data base element	BUS	STATION	POSITION
S800 I/O station	1, 2, …, 255	1, 2, …,79	–
S800 I/O module	1, 2, …, 255	1, 2, …, 79	1, 2, …, 12, 101, …,112, 201, …, 212, : 701, …, 712,

See Figure 8 for an illustrated usage of address terminals in Advant Controller 450 data base elements.

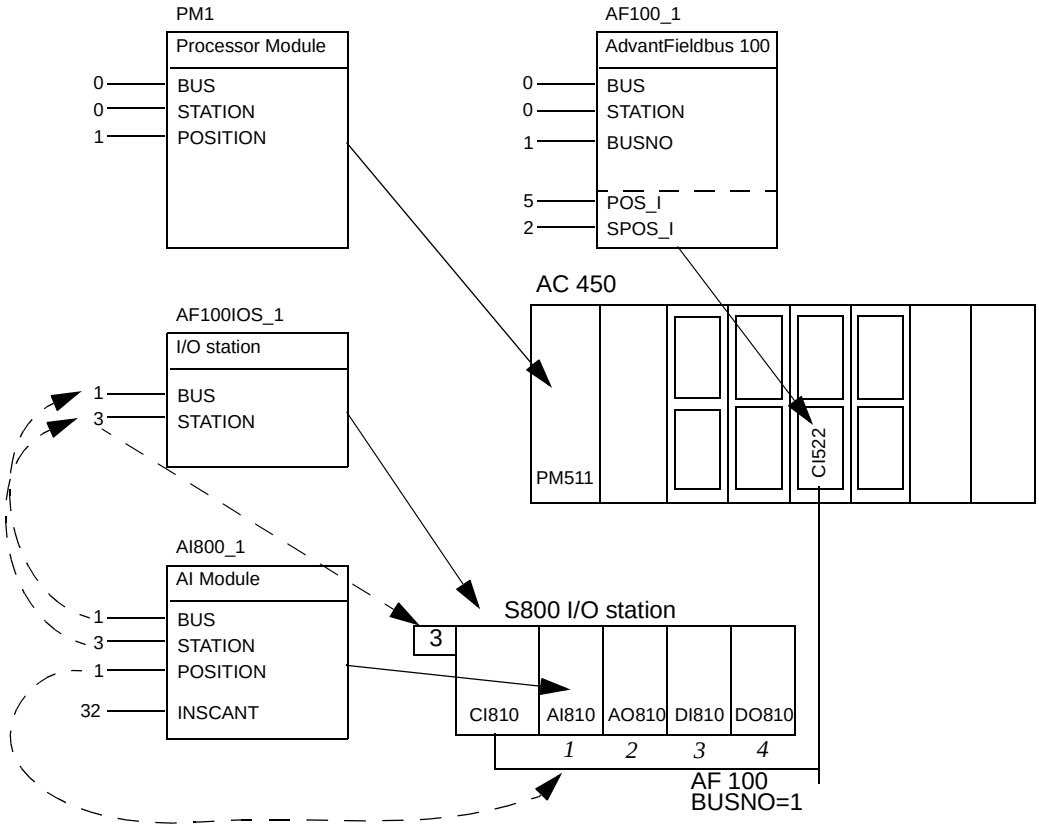


Figure 8. Example of Address Terminals Usage in S800 I/O module Data Base Elements

Other Data Base Elements

Some of the hardware modules are communication interface modules, for example CI520 and CI532V02. These type of modules handles communication to other stations and hardware units. Inside the data base elements for these communication interfaces there may exist terminals to define a unique bus or net number for this communication link. This bus or net number shall then be used to refer stations or nodes connected to this communication link. As an example stations connected to Advant Fieldbus 100 (via CI520) shall be referenced by the bus number specified on terminal BUSNO in the Advant Fieldbus 100 data base element, and the unique station number attached to this physical station or controller. See Figure 9 for an illustration of address terminal usage in Advant Fieldbus 100 related data base elements.

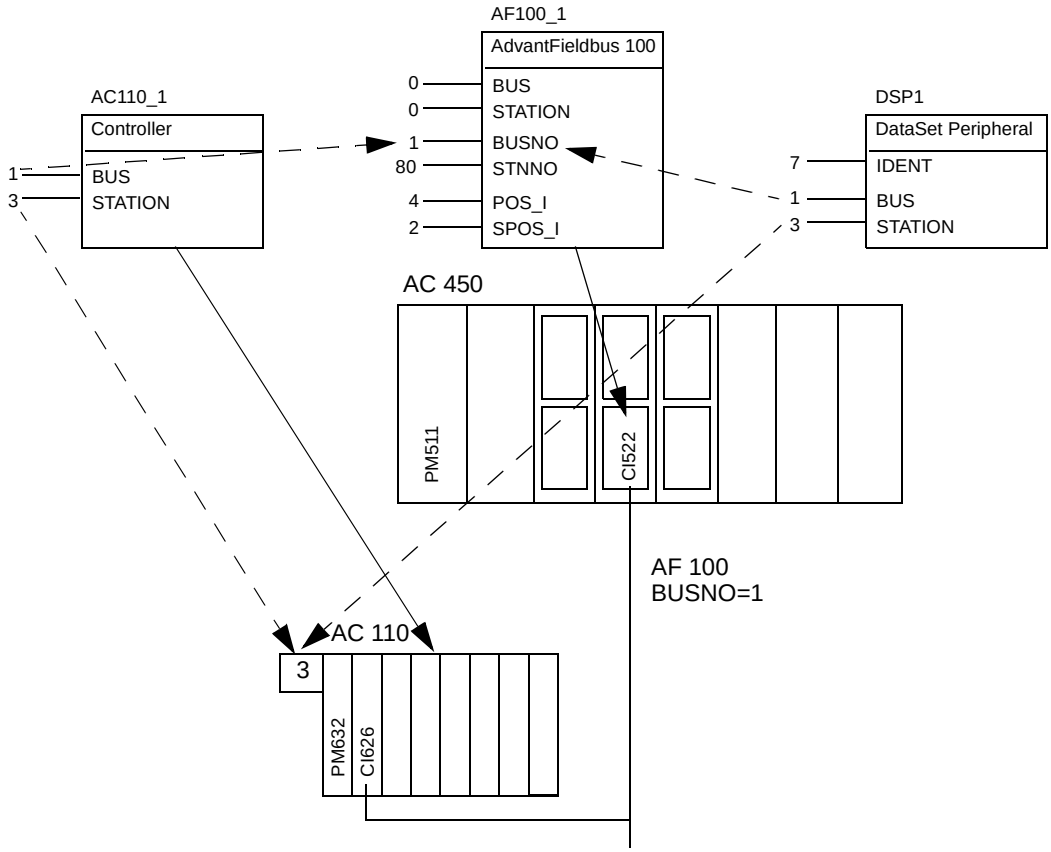


Figure 9. Example Configuration of Advant Controller 450 Data Base Element

S800 I/O module DIAG terminal

Table 5. DIAG Terminal

Terminal	Value	Description and the action to be taken if any (***in italics***)
DIAG	OPERATIONAL	The I/O module is operational, working okay.
	OSP	The I/O module has detected loss of communication with the Communication Interface (for example CI810) module and entered the OSP (Output Set as Predetermined) state. It will automatically be taken into operation again by the system.
	READY	The module has its parameters and will automatically be taken in operation by the system.
	NOT CONFIGURED	The module has not its configuration parameters. The system will automatically send down the parameters and take the module into operation.
	ERROR	The module or the system has detected a faulty module or the communication with the module is broken. *Replace the I/O module, if the module shows a red LED.*
	INITIATION	The module is performing an initiation. The system will automatically configure the module and take it into operation.
	MAINTENANCE	Not reported by any I/O module.
	NO CONFIGURATION	Default value when creating the data base element. The system will automatically download the configuration and take the module into operation. It is also reported when the IMPL (Implemented) flag is set to 0. *Set IMPL to 1.*
	OSP (FORCED)	The Communication module (for example CI810) has detected that it has not been accessed by the Controller within expected time and forced all output modules into the OSP (Output Set as Predetermined) state. It will automatically be taken into operation again by the system.
	WRONG TYPE	The I/O module and the data base configuration does not comply. *Change the I/O module or replace the data base element with the appropriate type.*
	CONFIGURING	The CI810 module reports this when performing configuration of the I/O module.
	ERROR (FORCED)	The Communication module (for example CI810) has detected an error on the I/O module. *Replace the I/O module*.
	HW MISSING	The I/O module is not inserted in its position. *Insert the I/O module*.
	STATE: #N	Undefined state #N. Please report to ABB Service.

Creation and Modification of Data Base Elements

Creation and modification of data base element descriptions may be done only by means of the AMPL Control Configuration commands.

Technical Description

The technical description of the I/O boards can be found in the manual *S100 I/O Hardware Reference Manual*.

Data Base Elements in Functional Groups

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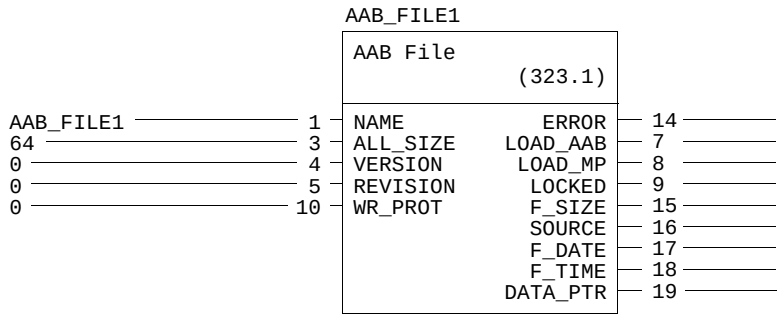
AAB File AAB_FILE

Summary

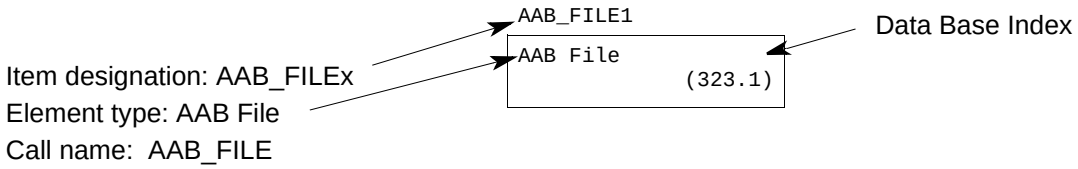
The AAB File data base element is used for storage of files in the controller. Files of any type with any content can be loaded or dumped with the On-Line Builder commands LOADFILE/DUMPFILE for all general file types. For Accuray data files the commands LAABF/DAABF are used.

The AAB_FILE data base element constitutes the control part of the AAB File storage system. The actual data is stored in a number of AAB_DATA instances (Logical record 324). The AAB_DATA concept does not have a defined data base element for presentation or source code handling, but provides a 256 byte consecutive memory storage area organized as 64 long integer (IL) properties. The required AAB_DATA instances are created or deleted through the associated AAB_FILE instance.
The AAB_FILE instance refers to the first associated AAB_DATA instance. The total number of AAB_DATA instances can be calculated as: 4 times the property ALL_SIZE (Kilobytes).

Overview



Head



Terminal Description

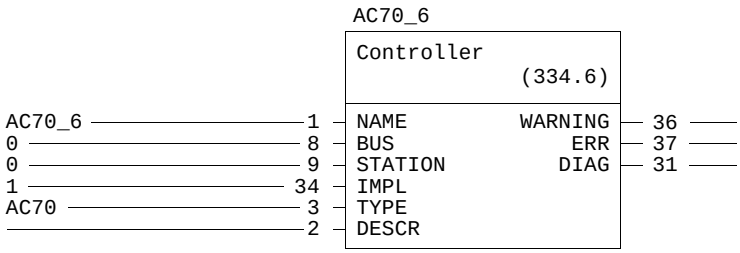
Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	user	AAB_ FILEx	A20(r)	Unique **NAME** of the element.	Maximum 20 characters.
3	ALL_SIZE	user	64	–	Number of kilobytes **ALL**ocated to the file. Number of AAB_DATA records this AAB_FILE is connected to (total **SIZE** of file in Kbyte). Range 1 - 64.	Maximum 64 kilobytes. Four AAB_DATA instances are created for each Kbyte
4	VERSION	user	0	I(r)	**VERSION** number of the file.	Can be freely selected by the user.
5	REVISION	user	0	I(r)	**REVISION** number of the file.	Can be freely selected by the user.
10	WR_PROT	user	0	B(r)	Loaded file is **WR**ite **PROT**ected.	Set by the user after loading of a file. New loading attempts are prevented when WR_PROT = 1.
14	ERROR	–	–	–	**ERROR** code	Not used.
7	LOAD_AAB	–	–	–	File **LOAD**ed to **AAB** board.	Not used.
8	LOAD_MP	system *(at load)*	–	–	A file has been **LOAD**ed in the controllers buffer.	Set by the load command.
9	LOCKED	–	–	–	File is **LOCKED**.	Not used.
15	F_SIZE	system *(at load)*	–	–	Exact **F**ile **SIZE** of the loaded file in byte.	Updated by the load command.
16	SOURCE	system *(at load)*	–	–	File name of the loaded **SOURCE** file.	Updated by the load command.
17	F_DATE	system *(at load)*	–	–	**DATE** of **F**ile loading.	Updated by the load command.
18	F_TIME	system *(at load)*	–	–	**TIME** of **F**ile loading.	Updated by the load command.
19	DATA_PTR	system	–	–	Reference to first instance of AAB_DATA (logical file 324) for file storage.	The last instance can be calculated as: x + ALL_SIZE * 4 - 1

Controller AC70

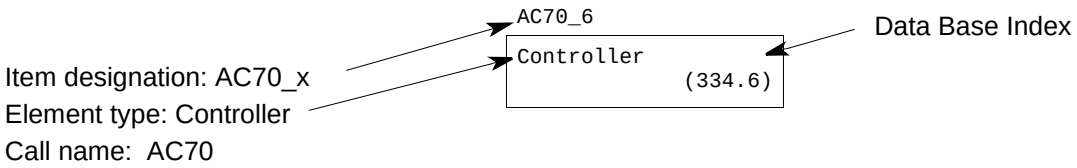
Summary

This Controller data base element specifies a Controller on Advant Fieldbus 100 connected to an Advant Controller 400 Series. The data base element contains diagnostic information of the Advant Controller 70 (AC70).

Overview



Head



Terminal Description

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	user	AC70_x	–	Unique **NAME** of the I/O station.	Maximum 20 characters.
8	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
9	STATION	user	0	B(r)	**STATION**. Part of Address.	
34	IMPL	user	1	–	0=the module is spare 1=the module is **IMPL**emented.	–
3	TYPE	predef	AC70	–	Station **TYPE** designation.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
2	DESCR	user	–	–	**DESCR**iption	–
36	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
31	DIAG	system	–	I(r)	**DIAG**nostics.	See the table in subsection “DIAG (AF 100)” in the Introduction.

Function

The Controller data base element specifies an Advant Controller 70. The Advant Controller 400 Series supervises the Advant Controller 70. Diagnostic information is cyclically sent on Advant Fieldbus 100 from the Advant Controller 70.

See section “Address Terminals BUS, STATION, POSITION and SUBPOS“ in the Introduction for a configuration example of using the address terminals on Advant Fieldbus 100. Example includes one Controller (AC 110) data base element.

Implementation

The Advant Controller 70 itself is not affected by the IMPL terminal. The IMPL terminal only specifies whether or not to supervise the Controller (Advant Controller 70).

Selection of Address (BUS, STATION) Terminals

How to select the address terminals BUS and STATION can be found in section “Address terminals BUS, STATION, POSITION and SUBPOS“ in the Introduction.

For the (AC 70) Controller data base element the engineering tool checks that the specified BUS and STATION combination is unique within the AC 400 Series Controller.

Diagnostics

The Controller data base element indicates diagnostic information for an Advant Controller 70 on Advant Fieldbus 100.
The ERR terminal indicates fatal errors and WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. One or more diagnostics indicators may be set.
The conditions are listed in descending order of severity. The less severe indicators will be omitted, if all indicators do not fit within the available 20 characters.

Advant Controller 70 Series data base element diagnostic information

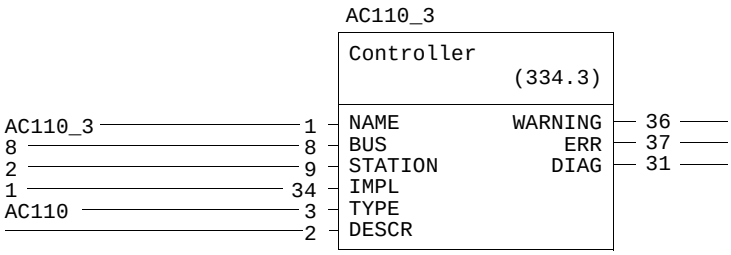
Condition	WARNING	ERR	DIAG	Action
IDentification **F**ailure	–	1	IDF	Verify that connected station is of specified type.
Station **N**ot **A**vailable	–	1	SNA	Check comm. media. Check connected station.
ACTive / NOT active	– / 1	– / –	ACT / –	Station is active / Station is NOT active in normal operation mode
General station **E**rror	–	1	GE	Check connected station.
Severe **E**rror	–	1	SE	Check connected station.
General **W**arning	1	–	GW	Check connected station.
Station S**W E**rror	–	1	SWE	Check application program in the connect station.
Peripheral **H**ardware **E**rror	1	–	PHE	Check hardware in the connected station
Redundant **C**able **1** bad	1	–	RC1	Check media (cable 1)
Redundant **C**able **2** bad	1	–	RC2	Check media (cable 2)
Redundant **P**ower **A** failure	1	–	RPA	Check power supply unit A
Redundant **P**ower **B** failure	1	–	RPB	Check power supply unit B
PRocess **E**rrors	1	–	PRE	Possible I/O hardware or input signal error in the connected station.
Station **HW E**rror	1	–	HWE	Non-fatal error in the connected station
Cable **R**edundancy **A**vailable	–	–	CRA	Station is configured to have redundant media if indicated in DIAG
Changed **D**iagnostics	–	–	CD	-

Controller AC110

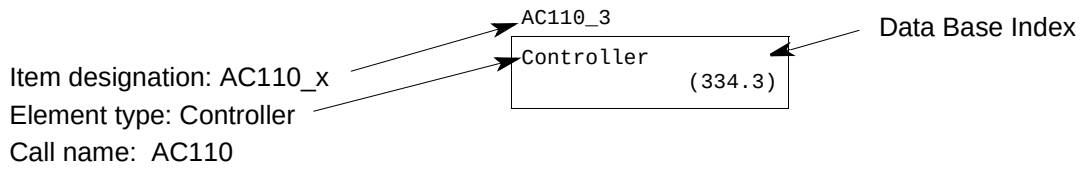
Summary

This Controller data base element specifies an Advant Controller 100 Series. The Advant Controller 400 Series supervises the Advant Controller 100 Series. Diagnostic information is cyclically sent on Advant Fieldbus 100 from the Advant Controller 100 Series (AC110).

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AC110_x	–	Unique **NAME** of the Controller.	–
8	BUS	user	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
9	STATION	user	0	–	**STATION**. Part of Address.	
34	IMPL	user	1	–	Controller is **IMPL**emented.	–
3	TYPE	predef	AC110	–	Controller **TYPE** designation: AC110.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
2	DESCR	user	–	–	**DESCR**iption of the Controller	–
36	WARNING	system	–	B(r)	**WARNING** flag indicating non-fatal errors.	–
37	ERR	system	–	B(r)	**ERR**or flag indicating hardware or configuration error.	–
31	DIAG	system	–	I(r)	Station **DIAG**nostics.	–

Function

The Controller data base element specifies an Advant Controller 100 Series. The Advant Controller 400 Series supervises the Advant Controller 100 Series. Diagnostic information is cyclically sent on Advant Fieldbus 100 from the Advant Controller 100 Series.

See section “Address Terminals BUS, STATION, POSITION and SUBPOS“ in the Introduction for a configuration example of using the address terminals on Advant Fieldbus 100. Example includes one Controller (AC 110) data base element.

Implementation

The Advant Controller 110 itself is not affected by the IMPL terminal. The IMPL terminal only specifies whether or not to supervise the Controller (Advant Controller 110).

Diagnostics

The Controller data base element indicates diagnostic information for an Advant Controller 110 on Advant Fieldbus 100.
The ERR terminal indicates fatal errors and WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. One or more diagnostics indicators may be set.
The conditions are listed in descending order of severity.

Advant Controller 100 Series data base element diagnostic information

Condition	WARNING	ERR	DIAG	Action
IDentification **F**ailure	–	1	IDF	Verify that connected station is of specified type.
Station **N**ot **A**vailable	–	1	SNA	Check comm. media. Check connected station.
General station **E**rror	–	1	GE	Check connected station.
Severe **E**rror	–	1	SE	Check connected station.
Station S**W E**rror	–	1	SWE	Check application program in the connect station.
General **W**arning	1	–	GW	Check connected station.

Advant Controller 100 Series data base element diagnostic information (Continued)

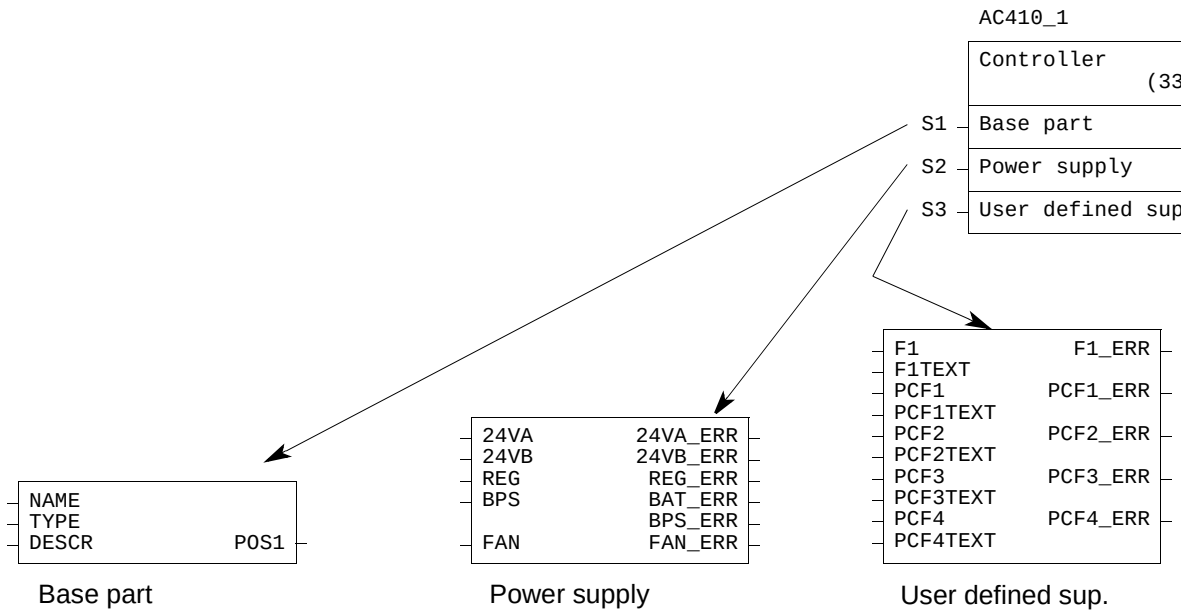
Condition	WARNING	ERR	DIAG	Action
Peripheral **H**ardware **E**rror	1	–	PHE	Check hardware in the connected station
Redundant **C**able **1** bad	1	–	RC1	Replace media (cable 1)
Redundant **C**able **2** bad	1	–	RC2	Replace media (cable 2)
PRocess **E**rrors	1	–	PRE	Possible I/O hardware or input signal error in the connected station.
Station **HW E**rror	1	–	HWE	Non-fatal error in the connected station
Cable **R**edundancy **A**vailable	–	–	CRA	Station is configured to have redundant media if indicated in DIAG
ACTive / NOT active	– / 1	– / –	ACT / –	Station is active / Station is NOT active in normal operation mode

Controller AC410

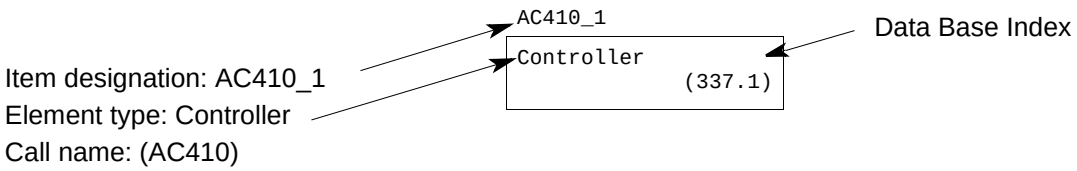
Summary

This Controller data base element represents the Advant Controller 410 (AC410). The element specifies the System Status supervision of power supply.

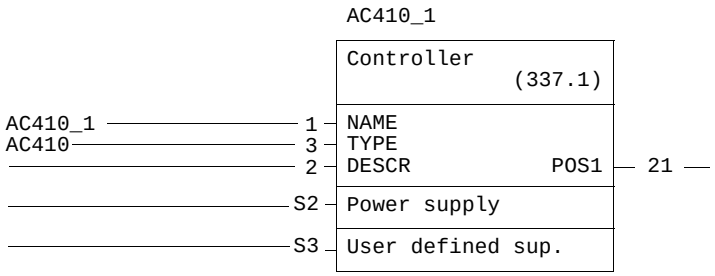
Overview



Head



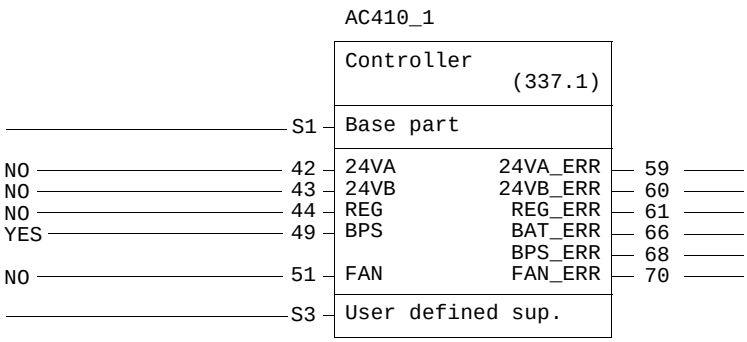
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AC410_1	–	Unique **NAME** of the Controller.	–
3	TYPE	predef	AC410	–	Controller **TYPE**: AC410.	–
2	DESCR	user	–	–	**DESCR**iption of the Controller.	–
21	POS1	system	–	–	**POS**ition **1** in the Controller.	–

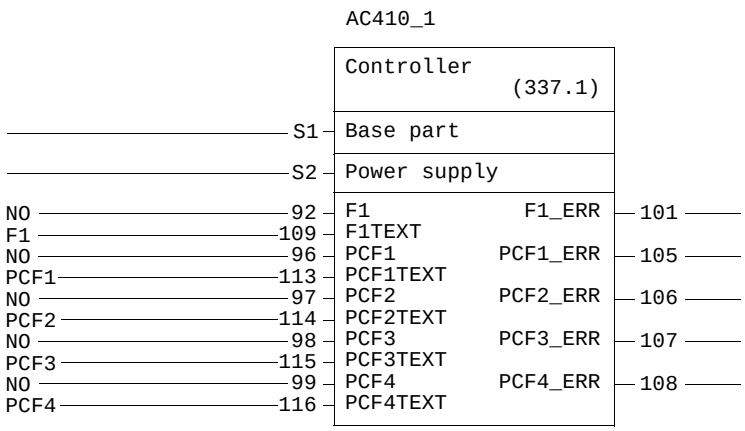
Power supply



Terminal Description, Power supply

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
42	24VA	user	NO	–	Power supply **24V A**.	Bool: 0=NO, 1=YES
43	24VB	user	NO	–	Power supply **24V B**.	–
44	REG	user	NO	–	**REG**ulator redundancy.	–
49	BPS	user	YES	–	**B**ack-up **P**ower **S**upply.	–
51	FAN	user	NO	–	Controller **FAN**.	–
59	24VA_ERR	system	0	B(r)	Power supply **24V A**, **ERR**or.	–
60	24VB_ERR	system	0	B(r)	Power supply **24V B**, **ERR**or.	–
61	REG_ERR	system	0	B(r)	Redundant **REG**ulators, **ERR**or.	–
66	BAT_ERR	system	0	B(r)	**BAT**tery, **ERR**or.	–
68	BPS_ERR	system	0	B(r)	**B**ack-up **P**ower **S**upply, **ERR**or.	–
70	FAN_ERR	system	0	B(r)	Controller **FAN**, **ERR**or.	–

User defined sup.



Terminal Description, User defined sup.

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
92	F1	user	NO	–	User defined supervision function **F1** enabled.	–
109	F1TEXT	user	F1	–	**TEXT** for function **F1** in node status display.	Max. 20 characters
96	PCF1	user	NO	–	PC triggered supervision function **PCF1** enabled.	–
113	PCF1TEXT	user	PCF1	–	**TEXT** for PC triggered function **PCF1** in system status display.	Max. 20 characters
97	PCF2	user	NO	–	PC triggered supervision function **PCF2** enabled.	–
114	PCF2TEXT	user	PCF2	–	**TEXT** for PC triggered function **PCF2** in system status display.	Max. 20 characters
98	PCF3	user	NO	–	PC triggered supervision function **PCF3** enabled.	–
115	PCF3TEXT	user	PCF3	–	**TEXT** for PC triggered function **PCF3** in system status display.	Max. 20 characters
99	PCF4	user	NO	–	PC triggered supervision function **PCF4** enabled.	–
116	PCF4TEXT	user	PCF4	–	**TEXT** for PC triggered function **PCF4** in system status display.	Max. 20 characters
101	F1_ERR	system	0	B(r)	Function **F1**, **ERR**or.	–
105	PCF1_ERR	PC	0	B(r/w)	PC triggered function **PCF1**, **ERR**or. Value entered by PC.	–
106	PCF2_ERR	PC	0	B(r/w)	PC triggered function **PCF2**, **ERR**or. Value entered by PC.	–
107	PCF3_ERR	PC	0	B(r/w)	PC triggered function **PCF3**, **ERR**or. Value entered by PC.	–
108	PCF4_ERR	PC	0	B(r/w)	PC triggered function **PCF4**, **ERR**or. Value entered by PC.	–

Function

Output POS1

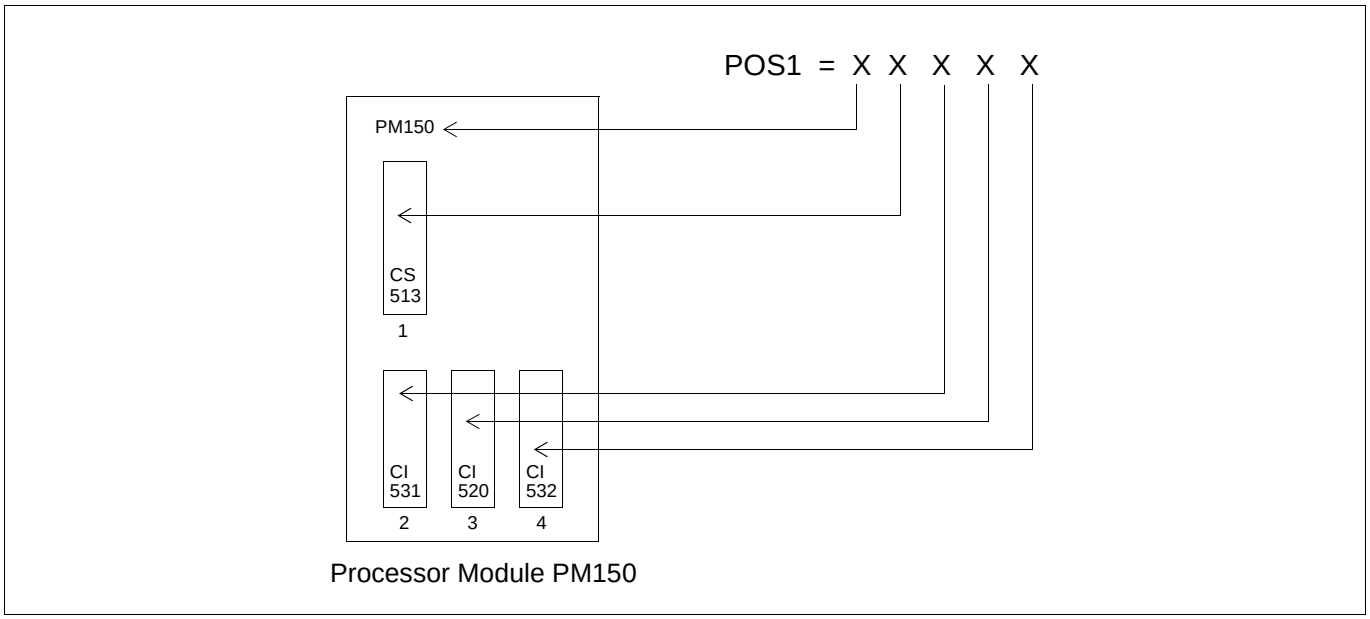
Output POS1 describes the processor module PM150, and the hardware in subpositions 1 - 4 of PM150.

Example:

POS1 = "X – – – –" means that PM150 is present but empty.

POS1 = "X X – – –" means there is a submodule in subposition 1.

POS1 = "X – – X X"means there are submodules in subpositions 3 and 4.



Power Supply

The Power Supply part describes how the power supply is configured. This description influences the System Status function (the Node Status display). Setting an input to "YES" enables supervision.

For the error outputs: 0 = OK, 1 = error.

Power Supply Terminal Settings

Terminal	Setting
24VA	"YES". Enables supervision of 24V power supply.
24VB	"YES" if there is a redundant 24V power supply.
REG	"NO" if there is a non-redundant regulator (DSSR 122). "YES" if there are redundant regulators (DSSR 170).

Power Supply Terminal Settings (Continued)

Terminal	Setting
BAT	“YES” if there is a memory-backup battery unit SB512.
FAN	“YES” if there is a fan.

User Defined Supervision

The “User defined supervision” part defines additional supervision. It is presented in the System Status Node display, under the heading “ADDITIONAL”.

Function F1 is the digital input of SB171.

Output F1_ERR reflects the state of that digital input:

F1_ERR = 1: Error, digital input 0 V or disconnected.

F1_ERR = 0: OK, digital input 24 V.

Functions PCF1-PCF4 are defined in PC programs. PC programs write outputs PCF1_ERR – PCF4_ERR.

PCF1_ERR = 1: Error

PCF1_ERR = 0: OK

Power Supply Terminal Settings

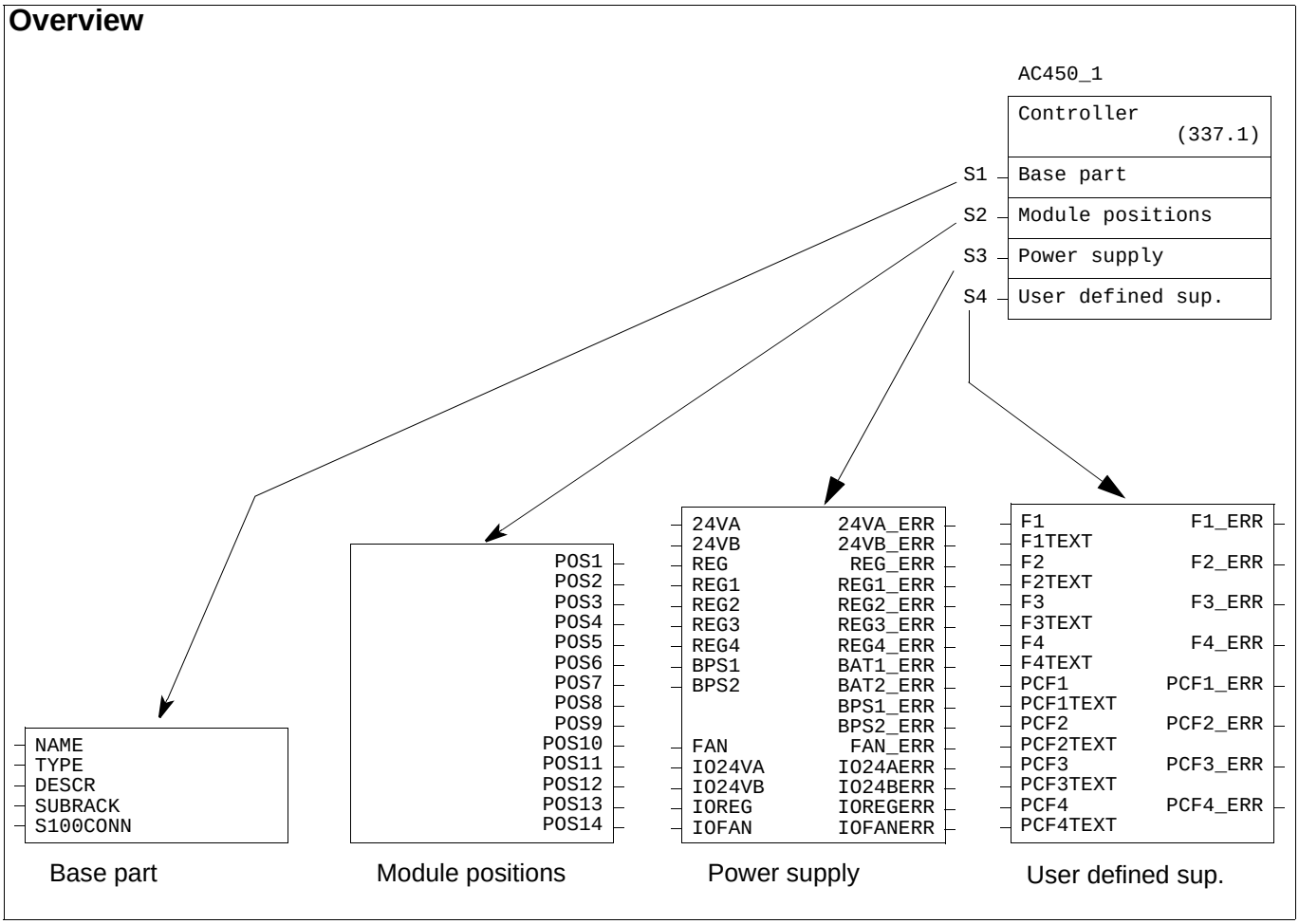
Terminal	Setting
F1	“YES” if there is a signal connected to the digital input of SB171.
PCF1	“YES” if there is a PC program which is connected to terminal PCF1_ERR.
:	:
PCF4	“YES” if there is a PC program which is connected to terminal PCF4_ERR.

Controller AC450

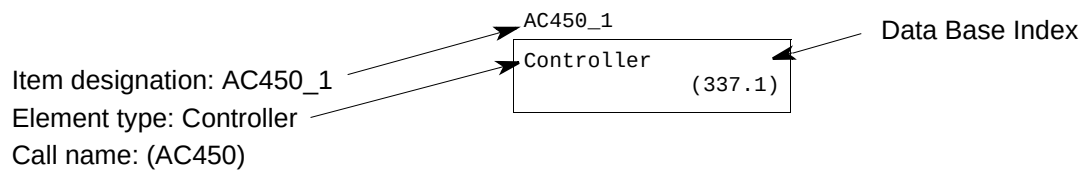
Summary

This Controller data base element represents the Advant Controller 450 (AC450). The element specifies the System Status supervision of power supply.

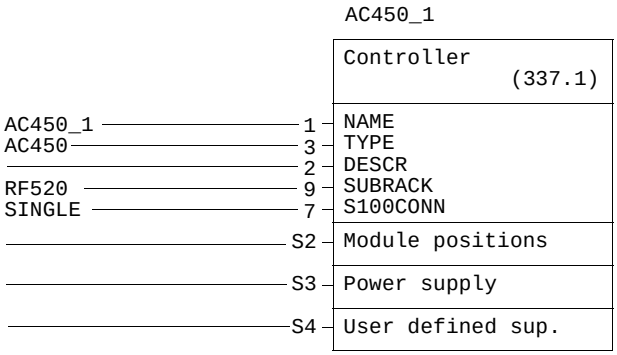
Overview



Head



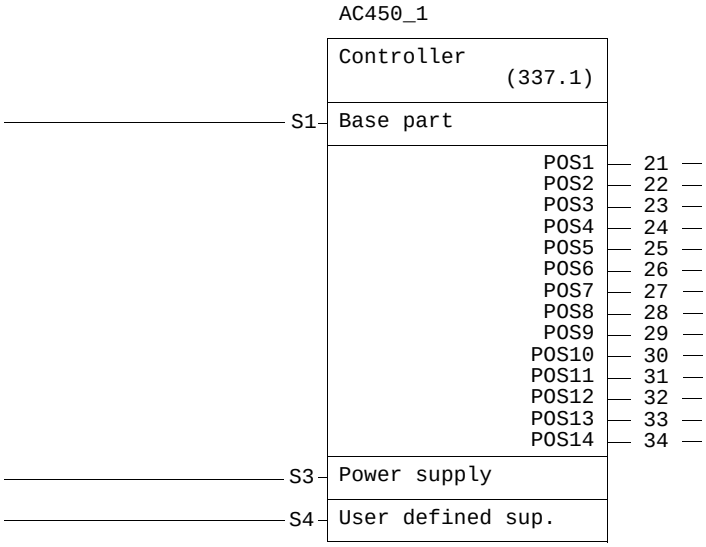
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AC450_1	–	Unique **NAME** of the Controller.	–
3	TYPE	predef	AC450	–	Controller **TYPE**: AC450.	–
2	DESCR	user	–	–	**DESCR**iption of the Controller.	–
9	SUBRACK	user	RF520	–	**SUBRACK** type used in the base station. RF520: Low (12 SU) subrack with 8 module positions. RF521: High (18 SU) subrack with 14 module positions.	–
7	S100CONN	user	SINGLE	–	**S100** I/O bus **CONN**ection type. NONE=S100 I/O is not used, SINGLE=Single S100 I/O bus extension is used, REDUNDANT=Redundant S100 I/O bus extension is used.	Redundant S100 I/O bus extension requires CPU redundancy.

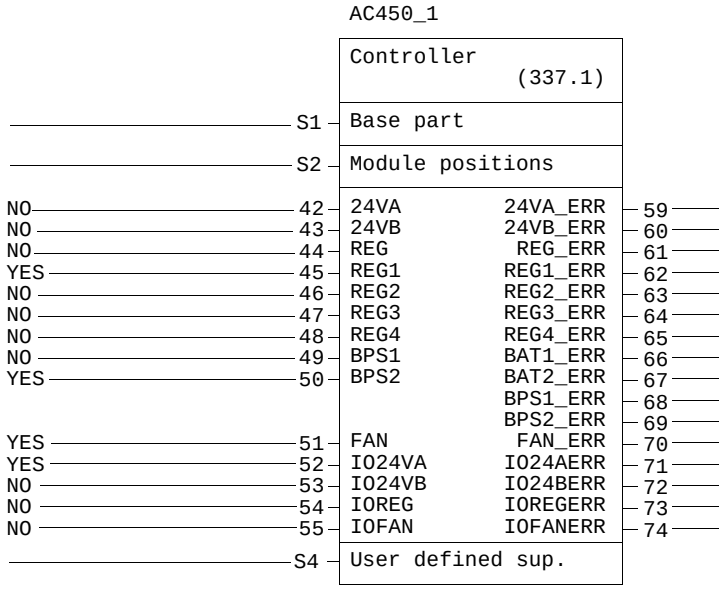
Module positions



Terminal Description, Module positions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
21	POS1	system	–	–	**POS**ition **1** in the controller subrack.	–
22	POS2	system	–	–	**POS**ition **2** in the controller subrack.	–
:	:	:	:	:	:	:
34	POS14	system	–	–	**POS**ition **14** in the controller subrack.	–

Power supply



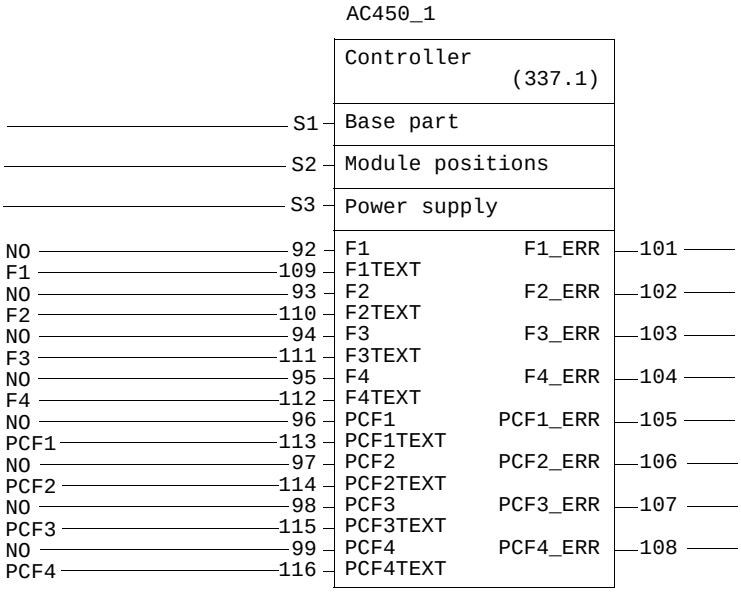
Terminal Description, Power supply

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
42	24VA	user	NO	–	Power supply **24V A**.	–
43	24VB	user	NO	–	Power supply **24V B**.	–
44	REG	user	NO	–	**REG**ulator redundancy.	–
45	REG1	user	YES	–	**REG**ulator **1**.	–
46	REG2	user	NO	–	**REG**ulator **2**.	–
47	REG3	user	NO	–	**REG**ulator **3**.	–
48	REG4	user	NO	–	**REG**ulator **4**.	–
49	BPS1	user	NO	–	**B**ack-up **P**ower **S**upply **1**.	–
50	BPS2	user	YES	–	**B**ack-up **P**ower **S**upply **2**.	–
51	FAN	user	YES	–	Controller **FAN**.	–
52	IO24VA	user	YES	–	Power supply **24V A**, **I/O** subrack.	–
53	IO24VB	user	NO	–	Power supply **24V B**, **I/O** subrack.	–
54	IOREG	user	NO	–	**REG**ulators in **I/O** subrack.	–

Terminal Description, Power supply (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
55	IOFAN	user	NO	–	**FAN** in **I/O** subrack.	–
59	24VA_ERR	system	0	B(r)	Power supply **24V A**, **ERR**or.	–
60	24VB_ERR	system	0	B(r)	Power supply **24V B**, **ERR**or.	–
61	REG_ERR	system	0	B(r)	**REG**ulators, **ERR**or. Sum of REG1_ERR to REG4_ERR.	–
62	REG1_ERR	system	0	B(r)	**REG**ulator **1**, **ERR**or.	–
63	REG2_ERR	system	0	B(r)	**REG**ulator **2**, **ERR**or.	–
64	REG3_ERR	system	0	B(r)	**REG**ulator **3**, **ERR**or.	–
65	REG4_ERR	system	0	B(r)	**REG**ulator **4**, **ERR**or.	–
66	BAT1_ERR	system	0	B(r)	**BAT**tery voltage **1**, **ERR**or.	–
67	BAT2_ERR	system	0	B(r)	**BAT**tery voltage **2**, **ERR**or.	–
68	BPS1_ERR	system	0	B(r)	**B**ack-up **P**ower **S**upply **1**, **ERR**or.	–
69	BPS2_ERR	system	0	B(r)	**B**ack-up **P**ower **S**upply **2**, **ERR**or.	–
70	FAN_ERR	system	0	B(r)	Controller **FAN**, **ERR**or.	–
71	IO24VAERR	system	0	B(r/w)	**24V A I/O** subrack, **ERR**or.	–
72	IO24VBERR	system	0	B(r/w)	**24V B I/O** subrack, **ERR**or.	–
73	IOREGERR	system	0	B(r)	Redundant **REG**ulators for **I/O**, **ERR**or.	–
74	IOFANERR	system	0	B(r)	**FAN** in **I/O** subrack, **ERR**or.	–

User defined sup.



Terminal Description, User defined sup.

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
92	F1	user	NO	–	User defined supervision function **F1** enabled.	–
109	F1TEXT	user	F1	–	**TEXT** for function **F1** in system status display.	Max. 20 characters
93	F2	user	NO	–	User defined supervision function **F2** enabled.	–
110	F2TEXT	user	F2	–	**TEXT** for function **F2** in system status display.	Max. 20 characters
94	F3	user	NO	–	User defined supervision function **F3** enabled.	–
111	F3TEXT	user	F3	–	**TEXT** for function **F3** in system status display.	Max. 20 characters
95	F4	user	NO	–	User defined supervision function **F4** enabled.	–
112	F4TEXT	user	F4	–	**TEXT** for function **F4** in system status display.	Max. 20 characters

Terminal Description, User defined sup. (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
96	PCF1	user	NO	–	PC triggered supervision function **PCF1** enabled.	–
113	PCF1TEXT	user	PCF1	–	**TEXT** for PC triggered function **PCF1** in system status display.	Max. 20 characters
97	PCF2	user	NO	–	PC triggered supervision function **PCF2** enabled.	–
114	PCF2TEXT	user	PCF2	–	**TEXT** for PC triggered function **PCF2** in system status display.	Max. 20 characters
98	PCF3	user	NO	–	PC triggered supervision function **PCF3** enabled.	–
115	PCF3TEXT	user	PCF3	–	**TEXT** for PC triggered function **PCF3** in system status display.	Max. 20 characters
99	PCF4	user	NO	–	PC triggered supervision function **PCF4** enabled.	–
116	PCF4TEXT	user	PCF4	–	**TEXT** for PC triggered function **PCF4** in system status display.	Max. 20 characters
101	F1_ERR	system	0	B(r)	Function **F1**, **ERR**or.	–
102	F2_ERR	system	0	B(r)	Function **F2**, **ERR**or.	–
103	F3_ERR	system	0	B(r)	Function **F3**, **ERR**or.	–
104	F4_ERR	system	0	B(r)	Function **F4**, **ERR**or.	–
105	PCF1_ERR	PC	0	B(r/w)	PC triggered function **PCF1**, **ERR**or. Value entered by PC.	–
106	PCF2_ERR	PC	0	B(r/w)	PC triggered function **PCF2**, **ERR**or. Value entered by PC.	–
107	PCF3_ERR	PC	0	B(r/w)	PC triggered function **PCF3**, **ERR**or. Value entered by PC.	–
108	PCF4_ERR	PC	0	B(r/w)	PC triggered function **PCF4**, **ERR**or. Value entered by PC.	–

Function

Module positions

Outputs POS1-POS14 describe the hardware in the subrack.

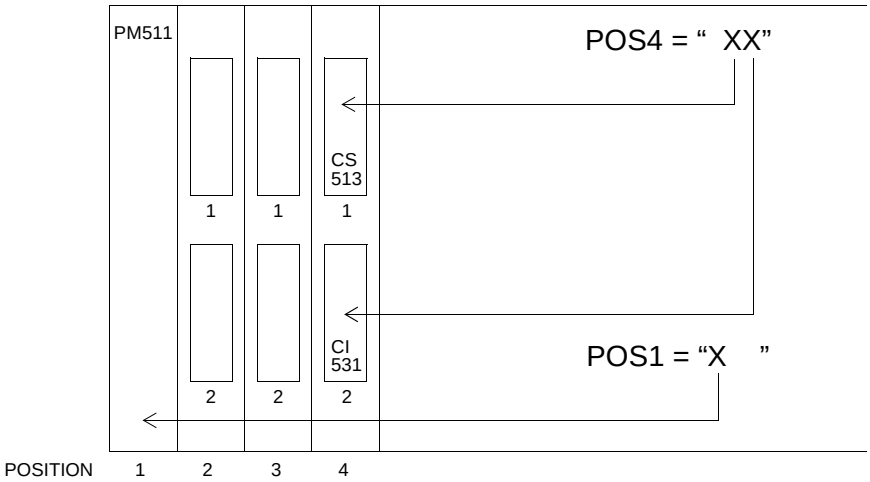
Example:

POS1 = “X – – ” means that PM511 is present.

POS4 = “– X X ” means there are two submodules at subposition 4.

POS5 = “– – – ” means there is no hardware at position 5.

Module positions



Advant Controller 450 subrack

Power Supply

The Power Supply part describes how the power supply is configured. This description influences the System Status function (the Node Status display). Setting an input to “YES” enables supervision.

For the error outputs: 0 = OK, 1 = error.

Power Supply Terminal Settings

Terminal	Setting
24VA	“YES”. Enables supervision of 24V power supply.
24VB	“YES” if there is a redundant 24V power supply.
REG	“NO” if there is only one regulator SR511. “YES” if there are two regulators SR511.

Power Supply Terminal Settings (Continued)

Terminal	Setting
REG1	“YES”. Enables supervision of the first SR511.(1)
REG2	“YES” if there is a redundant SR511.(1)
REG3	“NO”.
REG4	“NO”.
BPS1	“YES” if there is a duplicated back-up power supply SB510/SB511.(1)
BPS2	“YES” if there is a back-up power supply SB510/SB511.(1)
FAN	“YES” if there is a Controller Fan. The signal “Controller Fan error” is connected to the module TC520, input FAN.(2)
IO24VA	“YES”. Enables supervision of the 24 Volt in I/O subracks. The signal “I/O 24VoltA error” is connected to the module TC520, input A1.(2)
IO24VB	“YES” if the signal “I/O 24VoltB error” is connected to the module TC520, input A2.(2)
IOREG	“NO” if there is a non-redundant regulator (DSSR 122) in the I/O subrack. “YES” if there are redundant regulators (DSSR 170) in the I/O subrack.
IOFAN	“YES” if there is a fan for I/O.

(1) See section “Power Supply modules” of this element description.
(2) See sections “Power Supply modules” and “TC520” of this element description.

User Defined Supervision

The “User defined supervision” part defines additional supervision. It is presented in the System Status Node display, under the heading “ADDITIONAL”.

The functions F1 – F4 are the digital inputs of the module TC520.

Output F1_ERR – F4_ERR reflects the states of those digital inputs:

F1_ERR = 1: Error, digital input 0 V or disconnected.

F1_ERR = 0: OK, digital input 24 V.

Functions PCF1 – PCF4 are defined in PC programs. PC programs write outputs PCF1_ERR – PCF4_ERR.

PCF1_ERR = 1: Error

PCF1_ERR = 0: OK

Power Supply Terminal Settings

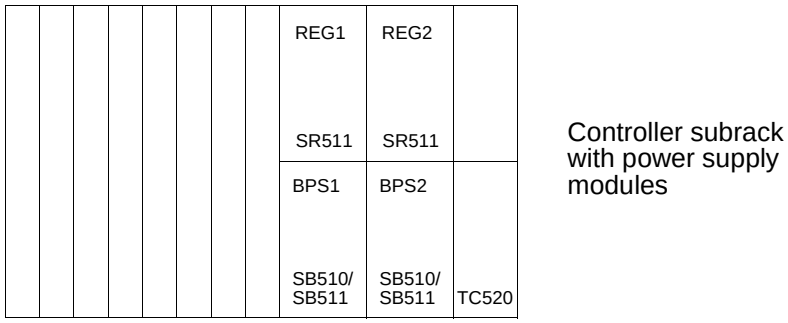
Terminal	Setting
F1	“NO”. (Because normally the signal “I/O 24V A error” is connected to digital input A1 of TC520 (1)). (“YES” if there is a user defined signal connected to digital input A1 of TC520 (1)).

Power Supply Terminal Settings (Continued)

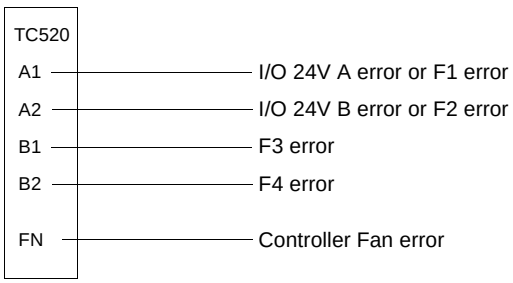
Terminal	Setting
F2	"NO" if the signal "I/O 24V B error" is connected to digital input A2 of TC520 (1). "YES" if there is a user defined signal connected to digital input A2 of TC520 (1).
F3	"YES" if there is a user defined signal connected to digital input B1 of TC520 (1).
F4	"YES" if there is a user defined signal connected to digital input B2 of TC520 (1).
PCF1 : PCF4	"YES" if there is a PC program which writes terminal PCF1_ERR. : "YES" if there is a PC program which writes terminal PCF4_ERR.

(1) See sections "Power Supply modules" and "TC520" of this element description.

Power Supply Modules



Supervision Unit TC520



Note that input A1 may be used **either** for supervision of 24V A in I/O subracks **OR** user defined function F1.

For supervision of 24V A in I/O subracks, set terminal IO24VA to "YES".

For supervision of user defined function F1, set terminal F1 to "YES".

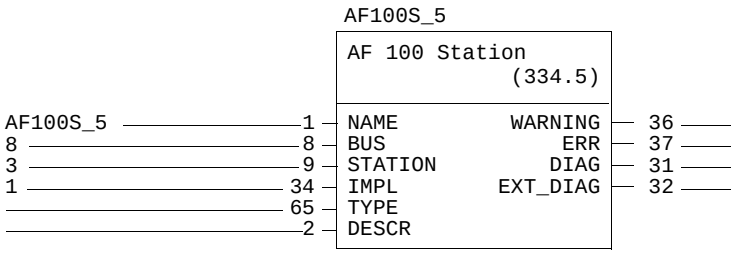
Input A2 may be used **either** for supervision of 24V B in I/O stations **OR** user defined function F2.

AF 100 Station AF100S

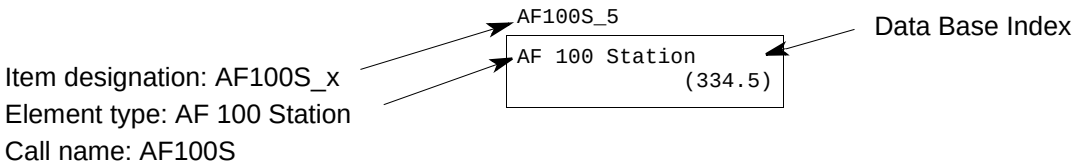
Summary

The Advant Fieldbus 100 Station data base element specifies a general type of station. It must support services to report diagnostic information in the same way as an Advant Controller 100 Series. The Advant Controller 400 Series (AF100S) supervises the Advant Fieldbus 100 station.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AF100S_x	–	Unique **NAME** of the station.	–
8	BUS	user	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
9	STATION	user	0	–	**STATION**. Part of Address.	
34	IMPL	user	1	–	Station is **IMPL**emented.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
65	TYPE	user	–	–	Station **TYPE** designation.	String 10 characters. Cannot be changed when IMPL=1 in op. mode.
2	DESCR	user	–	–	**DESCR**iption of the station	–
36	WARNING	system	–	B(r)	**WARNING** flag indicating non-fatal errors.	–
37	ERR	system	–	B(r)	**ERR**or flag indicating hardware or configuration error.	–
31	DIAG	system	–	I(r)	Station **DIAG**nostics.	–
32	EXT_DIAG	system	–	I(r)	**EXT**ended station **DIAG**nostics.	–

Function

The Advant Fieldbus 100 Station data base element specifies a general type of station. It must support services to report diagnostic information in the same way as an Advant Controller 100 Series. The Advant Controller 400 Series supervises the Advant Fieldbus 100 station.

See section “Address Terminals BUS, STATION, POSITION and SUBPOS“ in the Introduction for a configuration example of using the address terminals on Advant Fieldbus 100. Example includes one Controller (AC110) data base element. The relevant address terminals are applicable on the Advant Fieldbus 100 Station data base element.

Implementation

The Advant Fieldbus 100 station itself is not affected by the IMPL terminal. The IMPL terminal only specifies whether or not to supervise the station.

Station Type Designation

The TYPE terminal must be filled in with a correct type designation of the connected station. The supervision program will verify that a station of the correct type is connected to the Advant Fieldbus 100 using the specified type designation.

See the Advant Fieldbus 100 User’s Guide for examples of station TYPEs.

Diagnostics

The Advant Fieldbus 100 data base element indicates diagnostic information for an Advant Fieldbus 100 station. The ERR terminal indicates fatal errors and WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. One or more diagnostics indicators may be set. The errors are listed in descending order of severity.

EXT_DIAG contains extended diagnostics unique for each type of station. If it is used, the meaning of the “bit pattern” is provided by the documentation delivered together with the station.

Advant Fieldbus 100 Station data base element diagnostic information

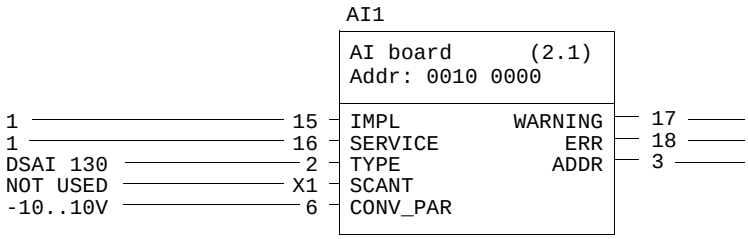
Condition	WARNING	ERR	DIAG	Action
IDentification **F**ailure	–	1	IDF	Verify that connected station is of specified type.
Station **N**ot **A**vailable	–	1	SNA	Check comm. media. Check connected station.
ACTive / NOT active	– / 1	– / –	ACT / –	Station is active / Station is NOT active in normal operation mode
General station **E**rror	–	1	GE	Check connected station.
Severe **E**rror	–	1	SE	Check connected station.
General **W**arning	1	–	GW	Check connected station.
Station S**W E**rror	–	1	SWE	Check application program in the connect station.
Peripheral **H**ardware **E**rror	1	–	PHE	Check hardware in the connected station
Redundant **C**able **1** bad	1	–	RC1	Check media (cable 1)
Redundant **C**able **2** bad	1	–	RC2	Check media (cable 2)
Redundant **P**ower **A** failure	1	–	RPA	Check power supply unit A
Redundant **P**ower **B** failure	1	–	RPB	Check power supply unit B
PRocess **E**rrors	1	–	PRE	Possible I/O hardware or input signal error in the connected station.
Station **HW E**rror	1	–	HWE	Non-fatal error in the connected station
Cable **R**edundancy **A**vailable	–	–	CRA	Station is configured to have redundant media if indicated in DIAG
Changed **D**iagnostics	–	–	CD	-

AI board AI

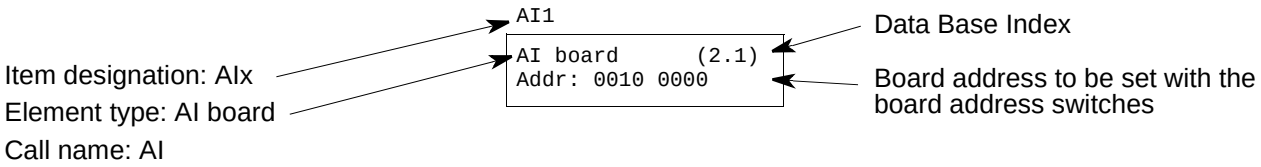
Summary

The AI board data base element holds the data values of the terminals associated to a standard analog input board. The element is superior to the signal elements associated to the analog input channels in the board.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
15	IMPL	user	1	B(r)	0=the board is spare 1=the board is **IMPL**emented	–
16	SERVICE	user, dialog	1	B(r/w)	The in-**SERVICE** terminal controls/ shows whether the board is in service or has been taken out of service.	–
2	TYPE	user	DSAI_ 130	–	Board **TYPE**: DSAI_110, DSAI_130, DSAI_133 and DSAI_135.	TYPE must be selected when creating the element. The full name including "_" must be entered.
X1	SCANT	–	NOT USED	–	**SCANT**ime. Not used.	–

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
6	CONV_PAR	user	–10..10V	–	The normal signal range can be entered as **CONV**ersion **PAR**ameter, when creating the element. It will only be used as a default value for subordinated Analog Input elements.	Refer to the table for available signal ranges in Volts or mA for the different boards. The connection unit must be strapped for voltage or current.
17	WARNING	system	0	B(r)	Not used.	–
18	ERR	system	0	B(r)	**ERR**or terminal indicating non-functional board.	–
3	ADDR	system	–	–	Board location within the I/O **ADDR**ess range, presented in decimal format.	Cannot be changed.

Signal Ranges

Conversion Parameter

DSAI 110, 130, 130A

Voltage	–10.. +10 V	–5.. +5 V	–2.5.. +2.5 V	–1.25.. +1.25 V	±0.. +10 V	±0.. +5 V	±0.. +2.5 V	±0.. +1.25 V	+2.. +10 V	+1.. +5 V	+0.5.. +2.5 V	+0.25.. +1.25 V
Current	–20.. +10 mA	–10.. +10mA	–5.. +5 mA	±0.. +20 mA	±0.. +10 mA	±0.. +5 mA	+4.. +20 mA	+2.. +10 mA	+1.. +5 mA	–	–	–

DSAI 133, 133A, 135

Voltage	±0.. +10 V	±0.. +5 V	+2.. +10 V	+1.. +5 V
Current	±0.. +20 mA	+4.. +20 mA	–	–

Function

The process signal lines are connected in the connection unit. In this unit the user has to select for voltage or current input signal. At delivery the unit is set up for current input. A resistor should be cut off to select voltage input. The connection unit also performs overvoltage protection and hf-filtering.

The board contains:

- a low-pass filter (6.5 Hz) for each input
- a multiplexer that selects input
- an amplifier with programmable gain that selects one of four input ranges
- an A/D converter.

The multiplexer, amplifier and A/D converter are controlled by the Central unit.

The Central unit cannot check if current or voltage input is selected, it treats all as voltage.

2 reference input channels are included. One should always read 0 and the other full range, otherwise the ERR terminal is set.

A red LED indicates fault or not initiated board. A yellow LED indicates A/D conversion (board scanned).

Address selection: The address to be set is given in the head of the data base element.

Example: the first analog input board is located at hexadecimal address 20=0010 0000 (i.e. address bit 5 set).

Refer to the manual *Advant Controller 410 User's Guide* and *Advant Controller 450 User's Guide* for more detailed information regarding the boards.

Board Set-up Procedure

With the data base element you set up the board for the process communication program.

The board set-up procedure includes:

1. Implementation
2. Disabling
3. Board Type Selection
4. Self Test And Board Change Test
5. Default Signal Range
6. Error Handling.

1. Implementation

During system INIT the board and its signals are included in the tables that define the process data communication, PDC. If you set IMPL=0, the board, and the signals associated with it, are removed from the PDC's tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the board. This saves some but not all Central unit load. This function will be used if a board must be unplugged during operation. If Advant Station 500 Series Operator Station is included in your system – see the Advant Station 500 Series Operator Station manuals.

3. Board Type Selection

The full name of the board, including "__" must be entered. TYPE must be selected when creating the element. Please note that Version designation is omitted when you enter board type. DSAI 133 is to be entered as DSAI_133.

Once created, a board type can be changed if the new board type has the same number of channels as the old one. If not, the data base element and the subordinated signal elements must be deleted.

4. Self Test And Board Change Test

The board performs a self-test at 5 second intervals, using the reference channels (on-board inputs). This test does not perform calibration of the inputs. At the same time, a test that enables board change during operation is performed.

5. Default Signal Range

As a typing aid, you may enter normal signal range for this board as CONV_PAR, when creating the element. This range will be the default range for all subordinated signal elements. CONV_PAR in this element is used only when creating signal elements.

6. Error Handling

The ERR terminal is set in AI board element, if the control function has determined the board non-functional.

Typical errors are non-existent, malfunctioning or improperly strapped hardware or software or data base errors.

The ERR terminal can be connected to the PC program for desired function.

ERR is reset, at hardware errors, automatically within 5 seconds of replacement of the board.

The fault lamp on the board is lit when ERR is set (if the Central unit still has access to the board).

AI module AI810, AI820, AI890, AI895

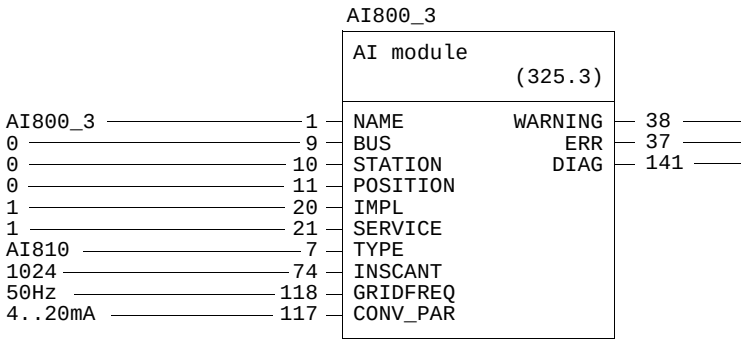
Summary

The AI module data base element specifies an Analog Input hardware module inserted in an S800 I/O station. The data base element is superior to the signal elements associated to the analog input channels in the module.

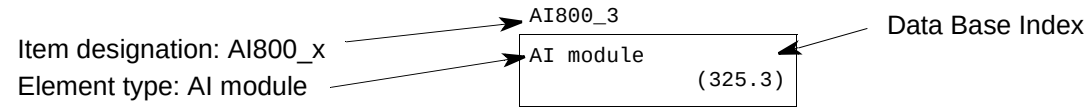
The following analogs input modules are supported:

- AI810: 8 channels for 0(4) .. 20 mA and 0(2) .. 10 V
- AI820: 4 differently channels for ± 20 mA, ± 10 V and +- 5 v.
- AI890: 8 channels with Intrinsic Safety interface for 0(4) .. 20 mA.
- AI895: 8 channels with Intrinsic Safety and HART interface for 0(4) .. 20 mA.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AI800_x	–	Unique **NAME** of the I/O module.	Maximum 20 characters.

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	
20	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	AI810/AI820/ /AI890/AI895	–	Module **TYPE** designation.	–
74	INSCANT	user	1024	–	Fieldbus **IN**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–
118	GRIDFREQ	user	50Hz	–	**GRID FREQ**uency: 16 2/3Hz, 50Hz or 60Hz	Not used.
117	CONV_PAR	user	4..20mA	–	**CONV**ersion **PAR**ameter. Default value for the I/O signal elements: **For AI810:** 0..20mA , 4..20mA , 0..10V , 2..10V , 0..20mA,LL , 4..20mA,LL , 0..10V,LL , 2..10V,LL **For AI890/AI895:** 0..20mA , 4..20mA , 0..20mA,LL , 4..20mA,LL **For AI820:** –20..20mA , 0..20mA , 4..20mA , -10..10V , 0..10V , 2..10V , –20..20mA,LL , 0..20mA,LL , 4..20mA,LL , -10..10V,LL , 0..10V,LL , 2..10V,LL , –5..5V , 0..5V , 1..5V , –5..5V,LL , 0..5V,LL , 1..5V,LL	See the table “Signal Ranges”. The comma before “LL” in some of the values is part of the string value.
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
141	DIAG	system	–	I(r)	**DIAG**nostics.	See section “S800 I/O module DIAG terminal” in the Introduction.

Signal Ranges

Conversion Parameter

AI810

Voltage	0..10V	0..10V,LL	2..10V	2..10V,LL
Current	0..20mA	0..20mA,LL	4..20mA	4..20mA,LL

AI820

Voltage	–10..10V	0..10V	0..10V,LL	2..10V	2..10V,LL	–5..5V	0..5V	0..5V,LL	1..5V	1..5V,LL
Current	–20..20mA	0..20mA	0..20mA,LL	4..20mA	4..20mA,LL					

AI890/AI895

Current	0..20mA	0..20mA,LL	4..20mA	4..20mA,LL

About Lower Limit (,LL)

The raw signal (not signal conditioned) value is always limited to the lowest value given by the signal range. This means that if the raw signal value is below this limit it will be set to the low limit value, before performing the signal conditioning.

Function of the AI810, AI820, AI890, AI895

The process signal cables are connected to the termination unit. The process signal lines are connected in the termination unit. That are separate connections for voltage or current input signal.

The module contains:

- a low-pass filter for each input
- a multiplexer that selects input
- an A/D converter.
- update time for all channels is 5ms (AI810, AI890, AI895: 8 channels, AI820: 4 channels)
- calibration is performed in factory
- HART communication (only AI895).

The multiplexer and A/D converter are controlled by a CPU on the module.

A red LED indicates fault or not initiated board. A yellow LED indicates warning (external fault or minor fault on the module). A green LED indicates module in operational mode

Refer to the manual *S800 I/O User's Guide* for more detailed information regarding the module.

Termination Units for the AI module

Module	Termination Units
AI810	TU810, TU830, TU835, TU838
AI820	TU810, TU830
AI890/AI895	TU890

Module Set-up Procedure

With the data base element you set up the module for the process communication program. There is no specified configuration in the data base for HART communication.

The module set-up procedure includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of INSCANT
5. Default Signal Range
6. Error Handling.

1. Implementation

During system INIT the module and its signals are included in the tables that define the process communication. If you set IMPL=0 on the module, the module and the channels associated with it are removed from the process communication tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation, to avoid unnecessary system messages. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system

3. Selection of address (BUS, STATION, POSITION) terminals

How to select the address terminals BUS, STATION and POSITION can be found in section "Address terminals BUS, STATION, POSITION and SUBPOS" in the Introduction.

4. Selection of INSCANT

The INSCANT terminal defines the cycle time to be used on Advant Fieldbus 100 to receive the input value from the I/O station to the AC 400 Series Controller. The selection of cycle time (INSCANT) shall be chosen with care due to bus bandwidth.

The maximum load on AF 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User's Guide*. The following table describes the load generated by the AI module for all available cycle times:

Generated AF 100 load in percent at different cycle times on INSCANT

	1ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
AI810, AI890, AI895	25.200	12.600	6.300	3.150	1.575	0.788	0.394	0.197	0.098	0.049	0.025	0.012	0.006
AI820	15.6	7.8	3.9	1.95	0.975	0.488	0.244	0.122	0.061	0.03	0.015	0.008	0.004

5. Default Signal Range

As a typing aid, you may enter normal signal range for this module as CONV_PAR, when creating the element. This range will be the default range for all subordinated signal elements. CONV_PAR in this element is used only when creating signal elements.

6. Error Handling

The ERR terminal is set in AI module element, if the module is determined non-functional, by the control function. Indicated errors are non-existent hardware, wrong module type, malfunctioning or software or data base errors. The ERR terminal can be connected to the PC program for desired function. ERR is reset, at hardware errors, automatically after replacement of the faulty module.

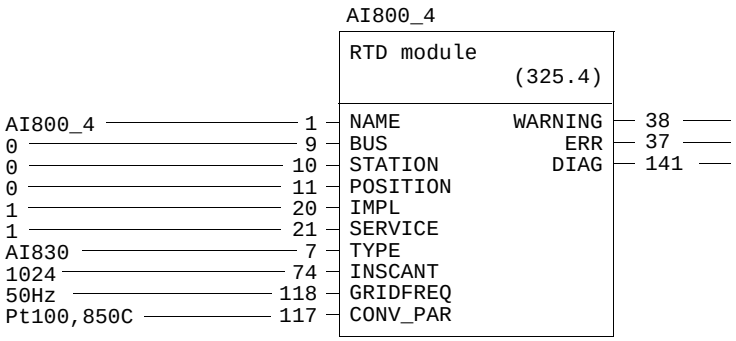
The DIAG terminal provides for a more specific information about the I/O module diagnostics, see section *S800 I/O module DIAG terminal* in the Introduction.

RTD module AI830

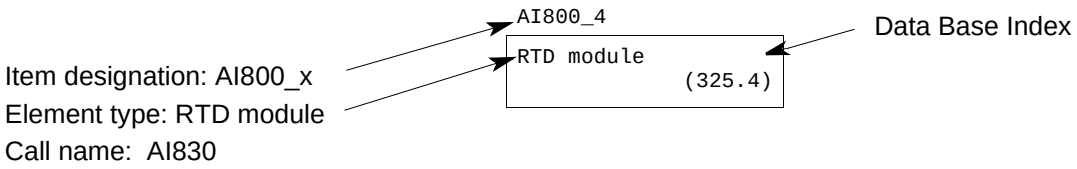
Summary

The RTD module data base element AI830 specifies an Analog Input RTD hardware module inserted in an S800 I/O station. The data base element is superior to the signal elements associated to the RTD input channels in the module.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AI800_x	–	Unique **NAME** of the I/O module.	Maximum 20 characters.
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
20	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	AI830	–	Module **TYPE** designation.	–
74	INSCANT	user	1024	–	Fieldbus **IN**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–
118	GRIDFREQ	user	50Hz	–	**GRID FREQ**uency: 50Hz or 60Hz	–
117	CONV_PAR	user	Pt100, 850C	–	**CONV**ersion **PAR**ameter. Default value for the I/O signal elements. Pt100,80C or Pt100,176F or Pt100,250C or Pt100,482F or Pt100,850C or Pt100,1562F or Ni100,180C or Ni100,356F or Ni120,260C or Ni120,500F or Cu10,260C or Cu10,500F or Resistor,400	See the table “Conversion Parameter” for a description of available values.
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
141	DIAG	system	–	I(r)	**DIAG**nostics.	See section “S800 I/O module DIAG terminal” in the Introduction.

Signal Ranges

Conversion Parameter

Value (1)	Sensor type	Temperature Range
Pt100,80C	Pt100	–80..+80 °C
Pt100,176F	Pt100	–112..+176 °F
Pt100,250C	Pt100	–200..+250 °C
Pt100,482F	Pt100	–328..+482 °F
Pt100,850C	Pt100	–200..+850 °C
Pt100,1562F	Pt100	–328..+1562 °F
Ni100,180C	Ni100	–60..+180 °C
Ni100,356F	Ni100	–76..+356 °F
Ni120,260C	Ni120	–80..+260 °C
Ni120,500F	Ni120	–112..+500 °F
Cu10,260C	Cu10	–100..+260 °C
Cu10,500F	Cu10	–148..+500 °F
Resistor,400	Resistor	0..400Ω

(1) All values include a comma

Function

The integration time of the A/D-converter is adapted to the grid frequency to suppress distortion.

Enter grid frequency: 50 Hz or 60 Hz. Conversion resolution: 15 bit.

Hardware Function

The Resistive temperature transducers are connected to the termination unit.

The board contains:

- current generator for measuring current
- a multiplexer that selects input
- a measuring amplifier
- an A/D converter.

The multiplexer and A/D converter are controlled by a CPU on the module.

For a description of channel update times, see *S800 I/O User's Guide*.

A red LED indicates fault or not initiated board. A yellow LED indicates warning (external fault or minor fault on the module). A green LED indicates module in operational mode

Refer to the *S800 I/O User's Guide* for more detailed information regarding the module.

Termination Units for the AI830 module

Module	Termination Units
AI830	TU810, TU830

Module Set-up Procedure

With the data base element you set up the module for the process communication program.

The module set-up procedure includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of INSCANT
5. Selection of GRID FREQuency
6. Default signal range
7. Error handling.

1. Implementation

During system INIT the module and its signals are included in the tables that define the process communication. If you set IMPL=0 on the module, the module and the channels associated with it are removed from the process communication tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation, to avoid unnecessary system messages. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system

3. Selection of address (BUS, STATION, POSITION) terminals

How to select the address terminals BUS, STATION and POSITION can be found in section “Address terminals BUS, STATION, POSITION and SUBPOS“ in the Introduction.

4. Selection of INSCANT

The INSCANT terminal defines the cycle time to be used on Advant Fieldbus 100 to receive the input value from the I/O station to the AC 400 Series Controller. The selection of cycle time (INSCANT) shall be chosen with care due to bus bandwidth. The maximum load on AF 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User's Guide*. The following table describes the load generated by the AI830 module for all available cycle times:

Generated AF 100 load in percent at different cycle times on INSCANT

1ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
25.200	12.600	6.300	3.150	1.575	0.788	0.394	0.197	0.098	0.049	0.025	0.012	0.006

5. Selection of GRID FREQuency

The integration time of the A/D-converter is adapted to the grid frequency to suppress distortion.

Enter grid frequency: 50 Hz or 60 Hz.

6. Default Signal Range

As a typing aid, you may enter normal signal range for this module as CONV_PAR, when creating the element. This range will be the default range for all subordinated signal elements. CONV_PAR in this element is used only when creating signal elements.

7. Error Handling

The ERR terminal is set in AI830 module element, if the module is determined non-functional, by the control function. Indicated errors are non-existent hardware, wrong module type, malfunctioning or software or data base errors. The ERR terminal can be connected to the PC program for desired function. ERR is reset, at hardware errors, automatically after replacement of the faulty module.

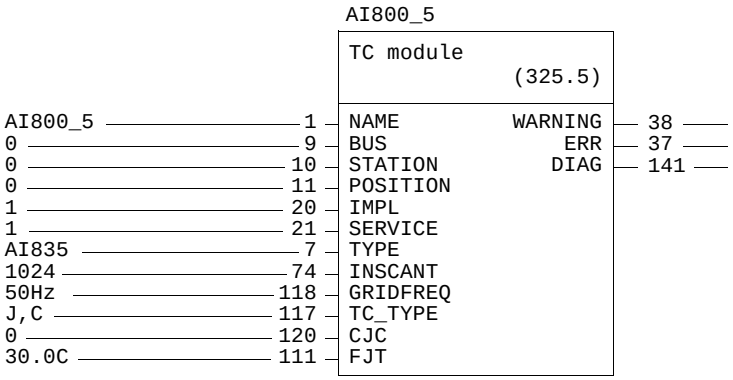
The DIAG terminal provides for a more specific information about the I/O module diagnostics, see section “S800 I/O module DIAG terminal“ in the Introduction.

TC module AI835

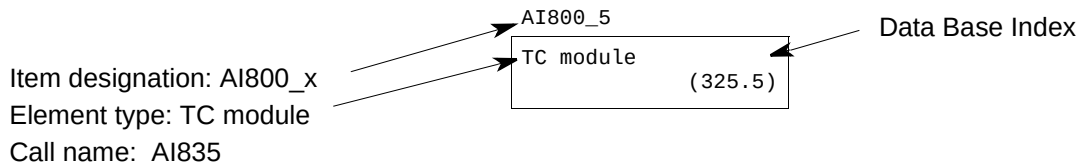
Summary

The TC module data base element AI835 specifies an Analog Input TC hardware module inserted in an S800 I/O station. The data base element is superior to the signal elements associated to the TC input channels in the module.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AI800_x	–	Unique **NAME** of the I/O module.	Maximum 20 characters.
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
20	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows wether the module is in service or has been taken out of service.	–
7	TYPE	predef	AI835	–	Module **TYPE** designation.	–
74	INSCANT	user	1024	–	Fieldbus **IN**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–
118	GRIDFREQ	user	50Hz	–	**GRID FREQ**uency: 50Hz or 60Hz	–
117	TC_TYPE	user	J,C	–	**T**hermo**C**ouple **TYPE**. Default value for the I/O signal elements: B,C or B,F C,C or C,F E,C or E,F J,C or J,F K,C or K,F N,C or N,F R,C or R,F S,C or S,F T,C or T,F Pt100,C or Pt100,F Linear	See table “Available Thermocouple types” below for a description of available values.
120	CJC	user	0	–	**C**old **J**unction **C**ompensation. Default value for the I/O signal elements: 0=Cold Junction Comp. 1=Fixed Junction Comp.	–
111	FJT	user	30.0C	–	**F**ixed **J**unction **T**emperature: -40.0C to 100.0C or -40.0F to 212.0F	–
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
141	DIAG	system	–	I(r)	**DIAG**nostics.	See section “S800 I/O module DIAG terminal” in the Introduction.

Available Thermocouple types

Value	Thermocouple Type	Temperature Range	References
B,C B,F	Platinum - 30% Rhodium/Platinum- 6% Rhodium, Pt-30Rh/Pt-6Rh	0 °C to 1820 °C 32 °F to 3308 °F	IEC 584-1 1995
C,C C,F	Tungsten - 5% Rhenium/Tungsten- 26% Rhenium, W-5Re/W-26Re	0 °C to 2300 °C 32 °F to 4172 °F	Hoskins Mfg. Co type C. This type is not approved by IEC
E,C E,F	Nickel - 10% Chromium / Copper -Nickel, Ni - 10% Cr / Cu - /Ni	–270 °C to 1000 °C –454 °F to 1832 °F	IEC 584-1 1995
J,C J,F	Iron/Copper - Nickel Fe/Cu-Ni	–210 °C to 1200 °C –346 °F to 2192 °F	IEC 584-1 1995
K,C K,F	Nickel - Chromium/Nickel-Aluminum, Ni-Cr/Ni-Al	–270 °C to 1372 °C –454 °F to 2502 °F	IEC 584-1 1995
N,C N,F	Platinum - 13% Rhodium/Platinum Pt-13Rh/Pt	–270 °C to 1300 °C –454 °F to 2372 °F	IEC 584-1 1995
R,C R,F	Platinum - 13% Rhodium/Platinum Pt-13Rh/Pt	–50 °C to 1768 °C –58 °F to 3214 °F	IEC 584-1 1995
S,C S,F	Platinum - 10% Rhodium/Platinum Pt-10Rh/Pt	–50 °C to 1768 °C –58 °F to 3214 °F	IEC 584-1 1995
T,C T,F	Copper/Copper - Nickel Cu/Cu-Ni	–270 °C to 400 °C –454 °F to 752 °F	IEC 584-1 1995
Pt100,C Pt100,F	Pt100 for measure off cold junction	-40°C to 100°C –40°F to 212 °F	IEC 751
Linear	–	–25 mV to 75 mV	–

Function

The Resistive temperature transducers are connected to the termination unit.

The board contains:

- current generator for measuring current
- a multiplexer that selects input
- a measuring amplifier
- an A/D converter.

The multiplexer and A/D converter are controlled by a CPU on the module.

For a description of channel update times see *S800 I/O User's Guide.*

A red LED indicates fault or not initiated board. A yellow LED indicates warning (external fault or minor fault on the module). A green LED indicates module in operational mode

Refer to the manuals *S800 I/O User's Guide* for more detailed information regarding the module.

Termination Units for the AI835 module

Module	Termination Units
AI835	TU810, TU830

Module Set-up Procedure

With the data base element you set up the module for the process communication program.

The module set-up procedure includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of INSCANT
5. Selection of GRID FREQuency
6. Default Thermocouple type
7. Default Cold Junction Compensation
8. Error handling.

1. Implementation

During system INIT the module and its signals are included in the tables that define the process communication. If you set IMPL=0 on the module, the module and the channels associated with it are removed from the process communication tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation, to avoid unnecessary system messages. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system

3. Selection of address (BUS, STATION, POSITION) terminals

How to select the address terminals BUS, STATION and POSITION can be found in section “Address terminals BUS, STATION, POSITION and SUBPOS“ in the Introduction.

4. Selection of INSCANT

The INSCANT terminal defines the cycle time to be used on Advant Fieldbus 100 to receive the input value from the I/O station to the AC 400 Series Controller. The selection of cycle time (INSCANT) shall be chosen with care due to bus bandwidth. The maximum load on AF 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User's Guide*. The following table describes the load generated by the AI835 module for all available cycle times:

Generated AF 100 load in percent at different cycle times on INSCANT

1ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
25.200	12.600	6.300	3.150	1.575	0.788	0.394	0.197	0.098	0.049	0.025	0.012	0.006

5. Selection of GRID FREQuency

The integration time of the A/D-converter is adapted to the grid frequency to suppress distortion.

Enter grid frequency: 50 Hz or 60 Hz.

6. Default Thermocouple type

As a typing aid, you may enter normal thermocouple type for this module as TC_TYPE, when creating the element. This value will be the default value for all subordinated signal elements. TC_TYPE in this element is used only when creating signal elements.

7. Default Cold Junction Compensation

As a typing aid, you may enter normal Cold Junction Compensation for this module as CJC, when creating the element. This value will be the default value for all subordinated signal elements. CJC in this element is used only when creating signal elements.

8. Error Handling

The ERR terminal is set in AI835 module element, if the module is determined non-functional, by the control function. Indicated errors are non-existent hardware, wrong module type, malfunctioning or software or data base errors. The ERR terminal can be connected to the PC program for desired function. ERR is reset, at hardware errors, automatically after replacement of the faulty module.

Missing or improperly reference or cold junctions channel are errors special for this module.

The DIAG terminal provides for a more specific information about the I/O module diagnostics, see section “S800 I/O module DIAG terminal” in the Introduction.

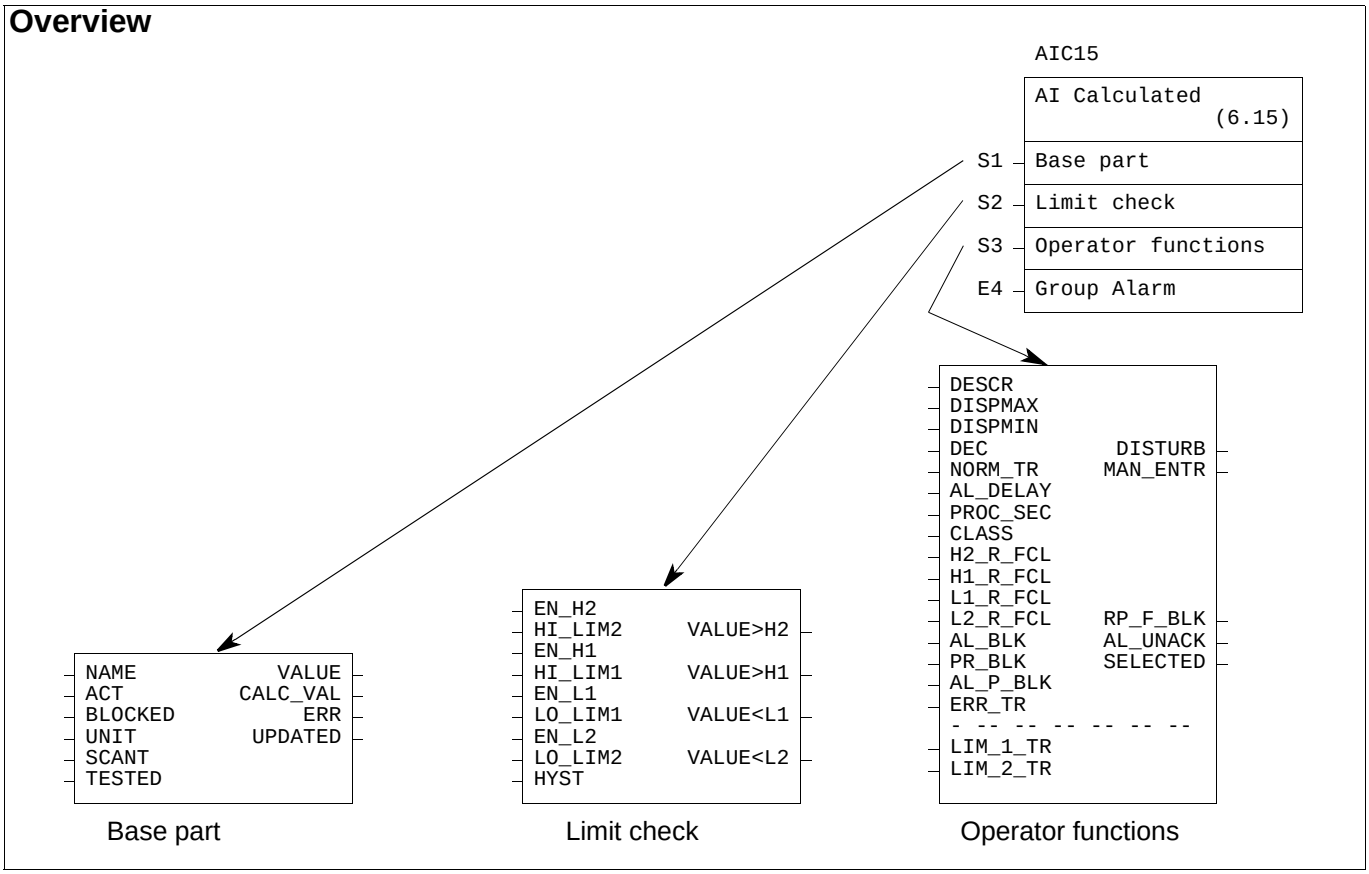
AI Calculated AIC

Summary

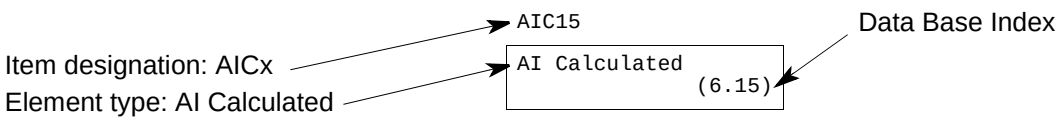
The data values of the Al Calculated data base element AIC defines an internal analog input signal so that the process communication program can treat your calculated signals as if they came from the process. For information about the extension parts of Group Alarm see data base element Group Member.

The main purpose is to supply an interface to Operator functions for signals that do not correspond to physical signals, but have been calculated by the system, usually by PC programs.

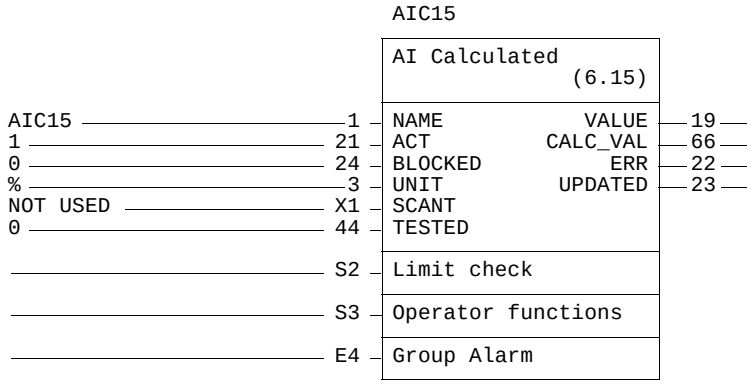
Overview



Head



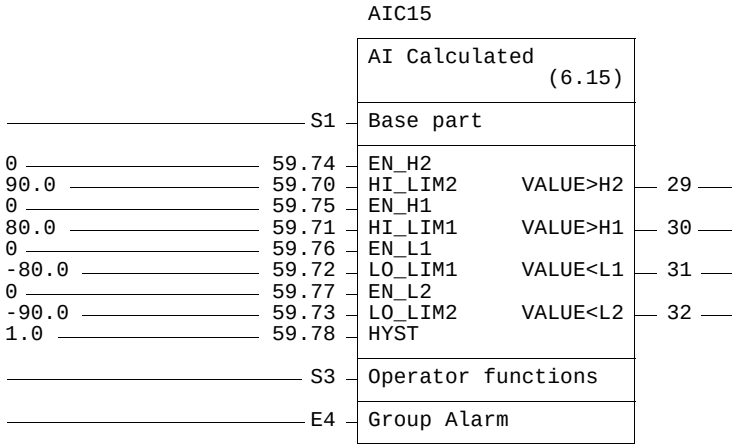
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AICx	–	Each AI Calculated signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
21	ACT	user	1	B(r)	1=the signal is **ACT**ive. 0=the signal is spare.	–
24	BLOCKED	dialog	0	B(r/w)	1=updating of signal value is **BLOCKED**.	–
3	UNIT	user	%	–	The engineering **UNIT** relating to the signal value stored.	Maximum 6 characters.
X1	SCANT	user	NOT USED	–	Not used. PC-program connected to CALC_VAL determines **SCANT**ime	–
44	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
19	VALUE	system	–	R(r/w)	Signal **VALUE** in engineering unit.	–
66	CALC_VAL	system	–	R(r/w)	Input connection for the **CALC**ulated **VAL**ue.	Normally connected to PC program.
22	ERR	system	–	B(r/w)	1=Configuration **ERR**or.	Can only be reset by correcting the error.
23	UPDATED	system	–	B(r/w)	1=Value has been **UPDATED** since start-up.	Cannot be affected by user.

Limit check



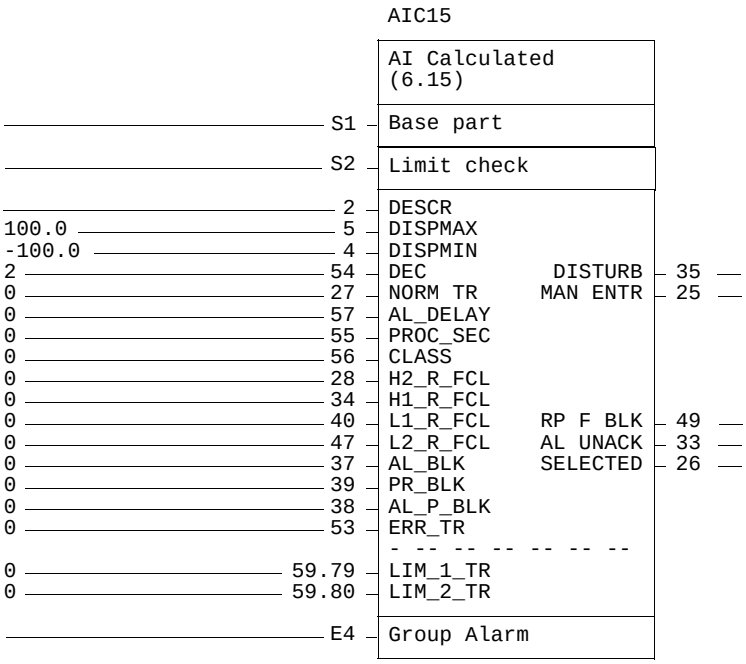
Terminal Description, Limit check

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
59.74	EN_H2	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **2**.	–
59.70	HI_LIM2	user	90.0	R(r/w)	**HI**gh **LIM**it no. **2** in engineering unit.	Accepted value HI_LIM2 > HI_LIM1.
59.75	EN_H1	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **1**.	–
59.71	HI_LIM1	user	80.0	R(r/w)	**HI**gh **LIM**it no. **1** in engineering unit.	Accepted value LO_LIM1 < HI_LIM1 < HI_LIM2.
59.76	EN_L1	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **1**.	–
59.72	LO_LIM1	user	–80.0	R(r/w)	**LO**wer **LIM**it no. **1** in engineering unit.	Accepted value HI_LIM1 > LO_LIM1 > LO_LIM2.
59.77	EN_L2	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **2**.	–
59.73	LO_LIM2	user	–90.0	R(r/w)	**LO**wer **LIM**it no. **2** in engineering unit.	Accepted value LO_LIM2 < LO_LIM1.
59.78	HYST	user	1.0	R(r/w)	**HYST**eresis for limit check in engineering units.	The hysteresis is located within each limit.
29	VALUE>H2	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **2**.	Cannot be affected by user.
30	VALUE>H1	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **1**.	Cannot be affected by user.

Terminal Description, Limit check (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
31	VALUE<L1	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **1**.	Cannot be affected by user.
32	VALUE<L2	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **2**.	Cannot be affected by user.

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Maximum 20 characters. You may enter any information regarding the signal.
5	DISPMAX	user	100.0	R(r/w)	**MAX**imum value **DISP**layed on screen	Derives scaling for graphic presentation.

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
4	DISPMIN	user	–100.0	R(r/w)	**MIN**imum value **DISP**layed on screen.	Derives scaling for graphic presentation.
54	DEC	user	2	–	The number of **DEC**imals to be presented by Operator Station.	0..6 decimals.
27	NORM_TR	user	0	B(r)	1=**NORM**al event handling in Operator Station.	0=no event driven updating in Operator Station.
57	AL_DELAY	user	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds: 0..127.	0 = no delay.
55	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
56	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
28	H2_R_FCL	user	0	B(r)	**H**igh limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H2 limit alarms.	–
34	H1_R_FCL	user	0	B(r)	**H**igh limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H1 limit alarms.	–
40	L1_R_FCL	user	0	B(r)	**L**ow limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L1 limit alarms.	–
47	L2_R_FCL	user	0	B(r)	**L**ow limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L2 limit alarms.	–
37	AL_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
39	PR_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **PR**intout in Operator Station.	–
38	AL_P_BLK	PC	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K**. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC-program.	–

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
53	ERR_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of signal **ERR**ors and operator commands.	Recommended settings 0=No event reporting 2=Event reporting including alarm handling
59.79	LIM_1_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H1 and L1 **LIM**it **TR**ansgressions.	Recommended settings 0=No event handling 3=Event handling, no alarm handling 4=Event handling, incl. alarm handling
59.80	LIM_2_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H2 and L2 **LIM**it **TR**ansgressions.	Recommended settings 0=No event handling 3=Event handling, no alarm handling 4=Event handling, incl. alarm handling
35	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indication whether a state of alarm exists in the element.	Cannot be affected by user.
25	MAN_ENTR	system	–	B(r/w)	1=Flag indication that the signal VALUE has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	–
49	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**lag **BL**oc**K**. Flag indicating that a repeating alarm is present in the element but that the indication has been blocked.	–
33	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	–
26	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–

Function

The AI Calculated data base element defines an internal analog input so that the process communication program can treat calculated signals as if they came from the process. For example, the PC program may calculate the difference or average of two analog input signals and present it in an AI Calculated element. To the Advant Station 500 Series Operator Station system it will look as if it was a true input.

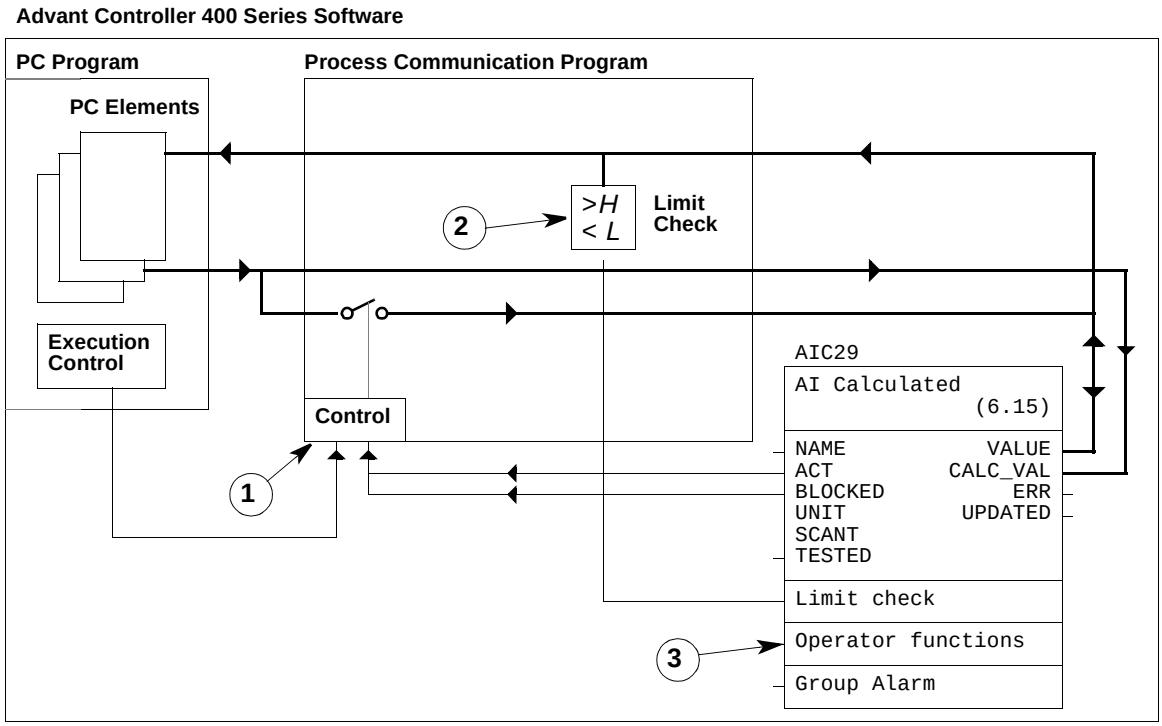
The signal processing controlled by the element includes:

1. Updating

2. Limit check
3. Operator Station functions.

The figure below illustrates this signal handling.

Function of AI Calculated Terminals



1. Updating

PC programs and commands writes to the terminal CALC_VAL. If BLOCKED=0 full signal treatment is done including updating of VALUE.

If you set BLOCKED, the data acquisition stops, allowing manual entry of VALUE.

To disable the data acquisition completely, you set ACT=0. This excludes the element from signal processing.

2. Limit check

In the limit check part of the element you determine if and how limit checking will be performed. The result is presented in the output terminals and is thus available to PC and other programs. If the NORM_TR flag is set to 1, each change in limit check status is also sent to the Advant Station 500 Series Operator Station. The main use of this function is for Advant Station 500 Series Operator Station presentation but it is also a convenient alternative to limit checking with PC element COMP_R.

3. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation.

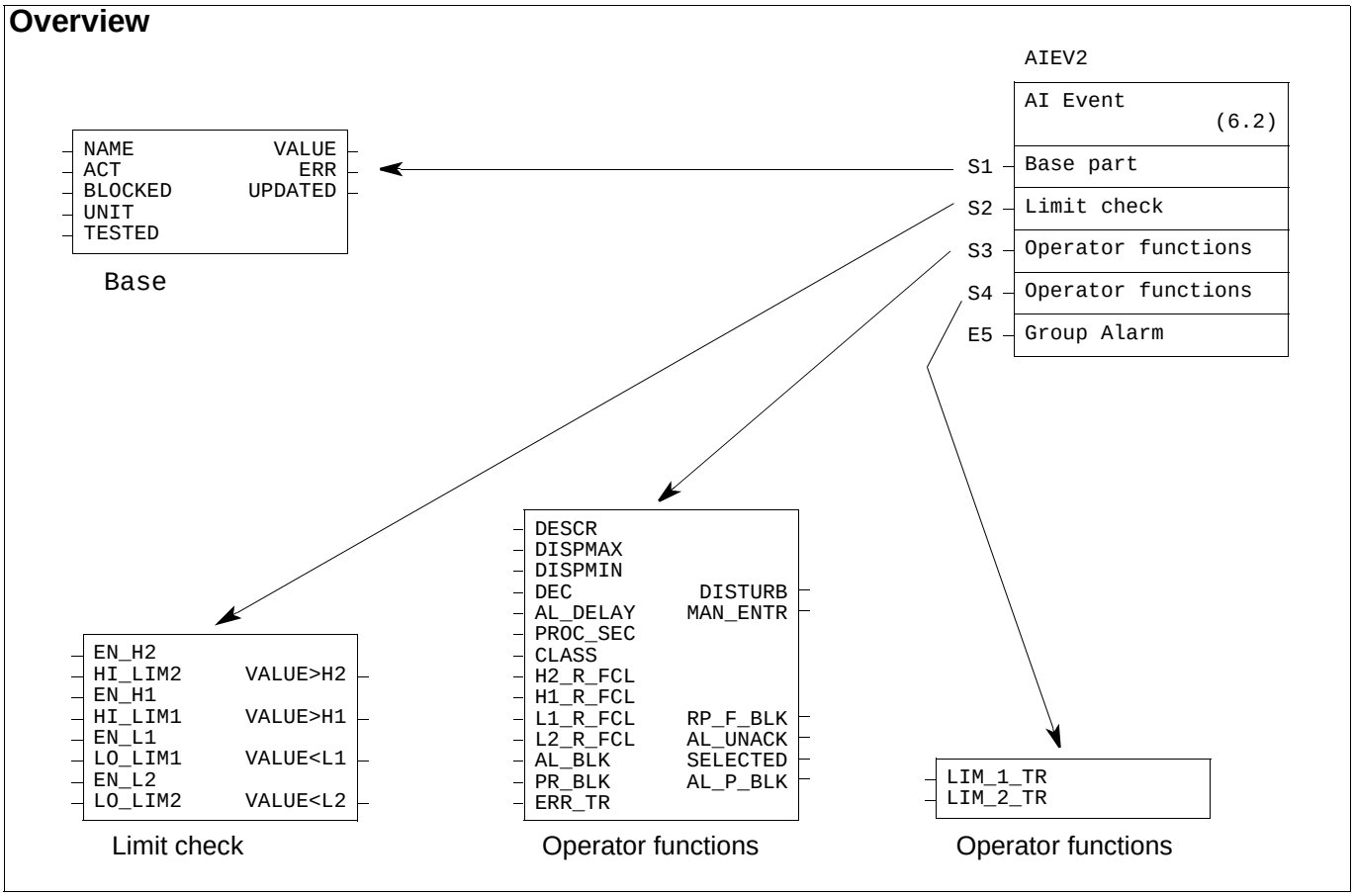
AI Event AIEV

Summary

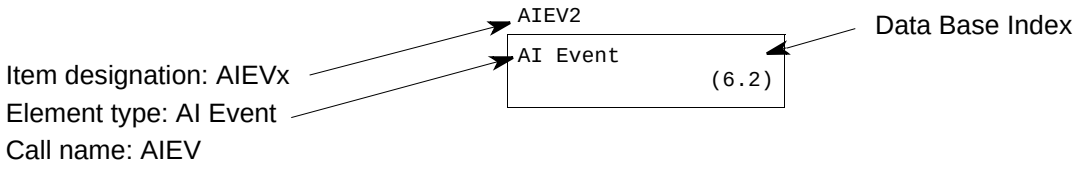
The AI Event data base element provides functions to receive time tagged events from externally connected controllers, for example Advant Controller 110. The process value terminal is not updated by the event set handler. It means that the event and alarm handling is the primary function for the functional unit variant AIEV.

The AI Event can be treated as an ordinary analog input, if the PC application program is built to cyclically receive the externally measured or calculated value. Receiving of the value can be programmed by means of data set communication. Depending on selected communication type (RCOM or Advant Fieldbus 100) between the Advant Controller 400 Series and Advant Controller 110, can MS (MVI Data Set communication) or DSP (Data Set Peripheral) be selected for the data set transfer.

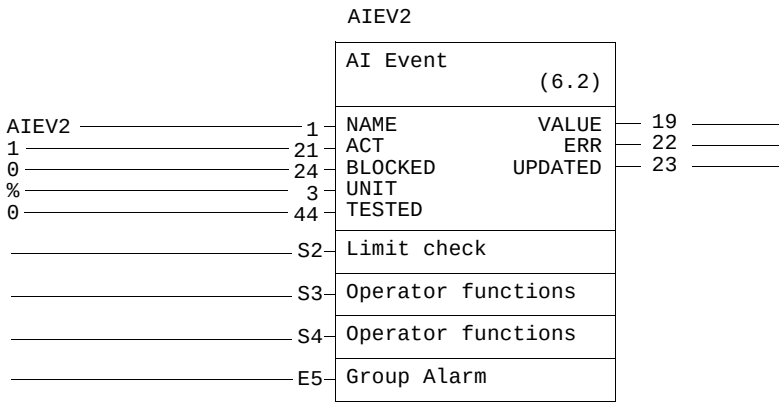
Overview



Head



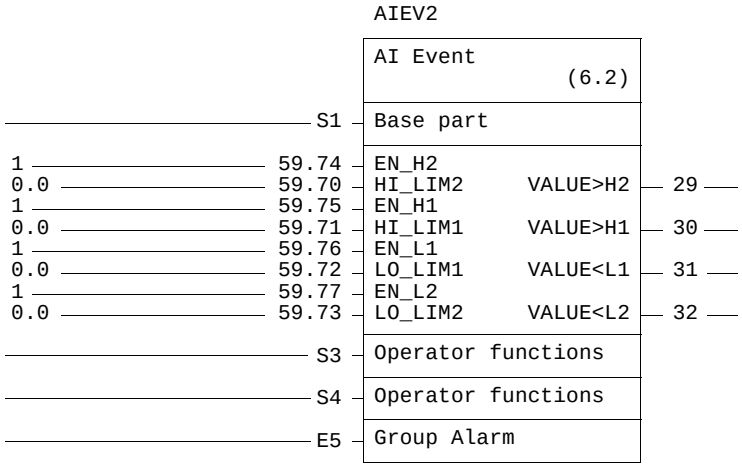
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AIEVx	–	Unique **NAME** of the AI Event signal.	Max. 20 characters.
21	ACT	user	1	B(r)	1=the signal is **ACT**ive. 0=the signal is spare.	–
24	BLOCKED	dialog	0	B(r/w)	1=updating of signal value is **BLOCKED**.	–
3	UNIT	user	%	–	The engineering **UNIT** relating to the signal value stored.	Maximum 6 characters.
44	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
19	VALUE	PC	0	R(r/w)	Signal **VALUE**.	–
22	ERR	system	0	B(r/w)	1=Configuration **ERR**or.	Can only be reset by correcting the error.
23	UPDATED	PC	0	B(r/w)	1=Value has been **UPDATED** since start-up.	Refer to section “Updating” for more information.

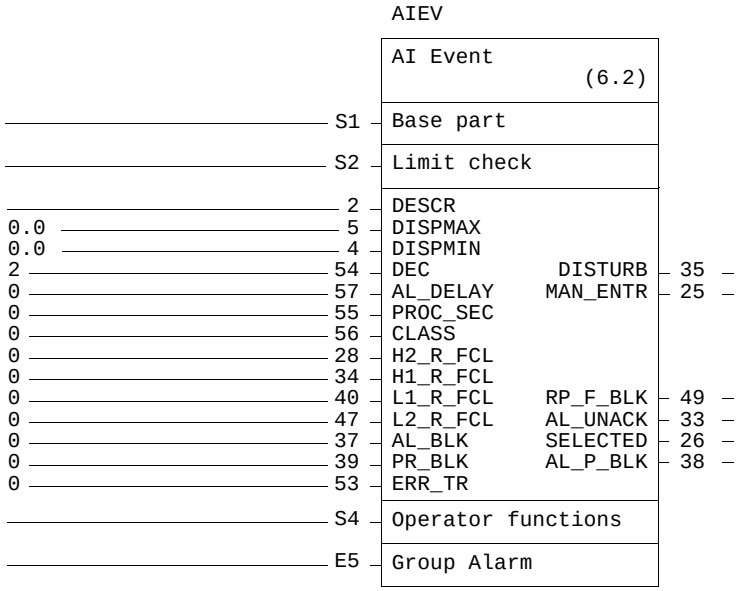
Limit check



Terminal Description, Limit check

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
59.74	EN_H2	user	1	B(r/w)	**EN**able **H**igh limit **2**.	–
59.70	HI_LIM2	user	0.0	R(r/w)	**HI**gh **LIM**it **2**.	–
59.75	EN_H1	user	1	B(r/w)	**EN**able **H**igh limit **1**.	–
59.71	HI_LIM1	user	0.0	R(r/w)	**HI**gh **LIM**it **1**.	–
59.76	EN_L1	user	1	B(r/w)	**EN**able **L**ow limit **1**.	–
59.72	LO_LIM1	user	0.0	R(r/w)	**LO**w **LIM**it **1**.	–
59.77	EN_L2	user	1	B(r/w)	1=**EN**ables **L**ow limit **2**.	–
59.73	LO_LIM2	user	0.0	R(r/w)	**LO**w **LIM**it **2**.	–
29	VALUE>H2	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit **2**.	Cannot be affected by user.
30	VALUE>H1	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit **1**.	Cannot be affected by user.
31	VALUE<L1	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit **1**.	Cannot be affected by user.
32	VALUE<L2	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit **2**.	Cannot be affected by user.

Operator functions (part 1)



Terminal Description, Operator functions (part 1)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Maximum 20 characters. You may enter any information regarding the signal.
5	DISPMAX	user	0.0	R(r/w)	**MAX**imum value **DISP**layed.	–
4	DISPMIN	user	0.0	R(r/w)	**MIN**imum value **DISP**layed.	–
54	DEC	user	2	–	The number of **DEC**imals to be presented by Operator Station.	0 - 6 decimals.
57	AL_DELAY	user	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds	Not used.
55	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
56	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–

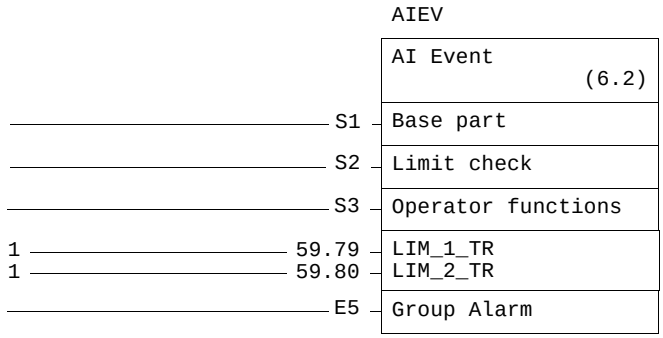
Terminal Description, Operator functions (part 1) (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
28	H2_R_FCL	user	0	B(r)	**H**igh limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H2 limit alarms.	–
34	H1_R_FCL	user	0	B(r)	**H**igh limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H1 limit alarms.	–
40	L1_R_FCL	user	0	B(r)	**L**ow limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L1 limit alarms.	–
47	L2_R_FCL	user	0	B(r)	**L**ow limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L2 limit alarms.	–
37	AL_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
39	PR_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **PR**intout in Operator Station.	–
53	ERR_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of signal **ERR**ors and operator commands.	Recommended settings 0=No event reporting 2=Event reporting including alarm handling
35	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indication whether a state of alarm exists in the element.	Cannot be affected by user.
25	MAN_ENTR	system	–	B(r/w)	1=Flag indication that the signal VALUE has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	–
49	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**ail **BL**oc**K**. Flag indicating that a repeating alarm is present in the element but that the indication has been blocked.	–
33	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	–
26	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–

Terminal Description, Operator functions (part 1) **(Continued)**

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
38	AL_P_BLK	PC	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K**. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC-program.	–

Operator functions (part 2)



Terminal Description, Operator functions (part 2)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
59.79	LIM_1_TR	user	1	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H1 and L1 **LIM**it **TR**ansgressions.	Recommended settings 1=Event handling, no alarm handling 2=Event handling, incl. alarm handling
59.80	LIM_2_TR	user	1	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H2 and L2 **LIM**it **TR**ansgressions.	Recommended settings 1=Event handling, no alarm handling 2=Event handling, incl. alarm handling

Function

The purpose of the AI Event data base element is to provide functions to receive of time tagged events generated by an AI object in an external Controller (for example Advant Controller 110). The Operator functions treats the AIEV signal as an ordinary input signal.

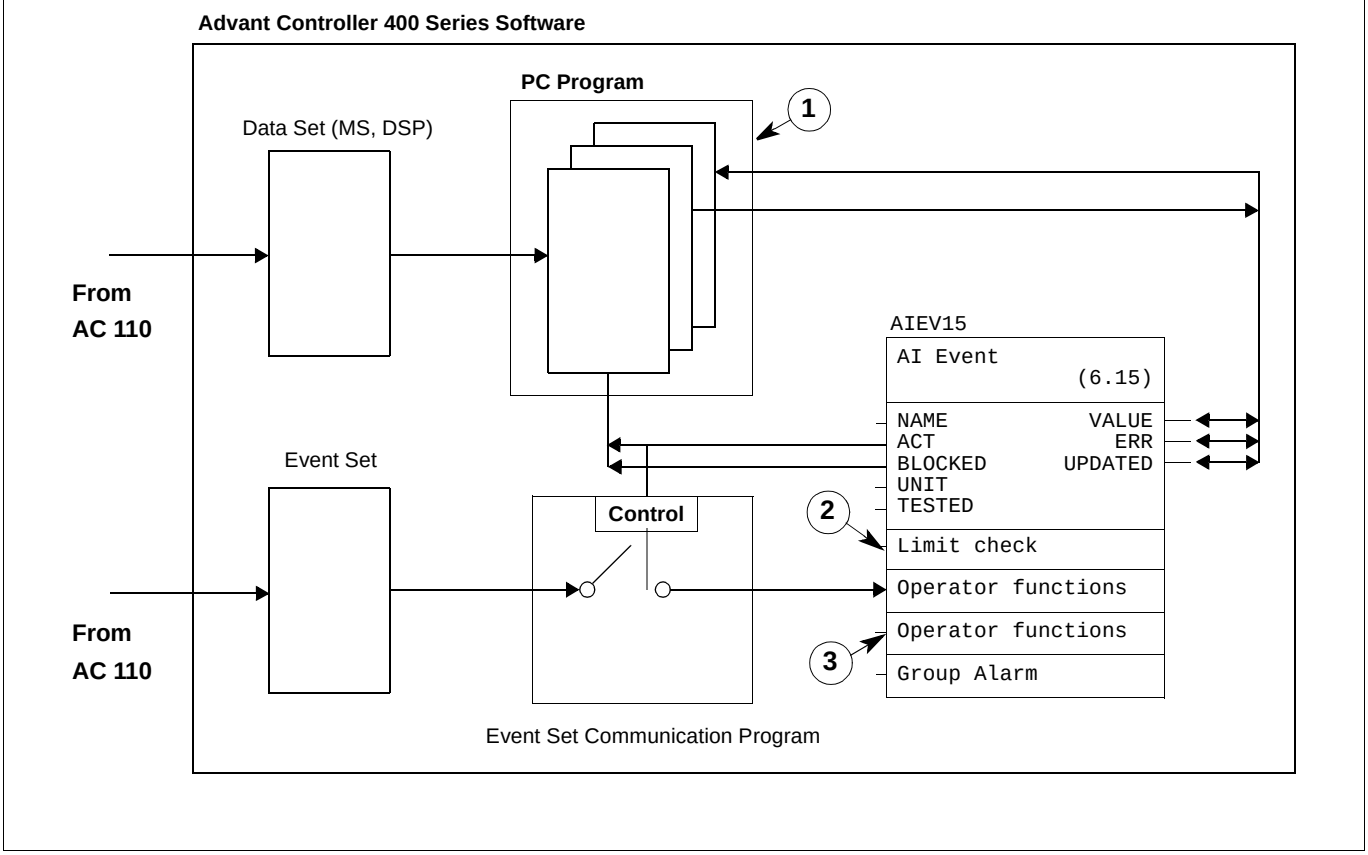
The following signal processing is **NOT** performed by the AI Event data base element:

1. Updating
2. Limit Checking.

Signal processing performed by the element is:

3. Event handling.

Function of AIEV Terminals



1. Updating

The VALUE terminal is not updated by the system when receiving external events. It is however possible to make the AI Event behave more or less as a complete AI object with some application programming. The application must use the Data Set Peripheral communication to cyclically receive the value from the corresponding AI Calculated element in the Advant Controller 110, and then update the VALUE terminal of the AI Event data base element.

Terminals to be handled by an application program when making AI Event a more complete AI object

The VALUE terminal is included but are not handled by the system. It provide for a possible update by the application program, by means of cyclic Data Set transfer and a PC application update. The update of the VALUE terminal does not generate an event to the Advant Station 500 Series Operator Station when any of the limits is crossed. The events are supposed to come from the external controller via the Event Set communication to which this element is supposed to be connected.

The UPDATED terminal is only reset to 0 at system start up and is after this not handled by the system. The application program is supposed to handle the update of this terminal when updating the VALUE terminal.

It is the application program responsibility to act according to what is specified on the BLOCKED terminal when updating the VALUE terminal. This is not taken care of by the system.

The ACT terminal controls the flow of time tagged events. It does not prevent the PC application program from updating the VALUE of the element, this must be controlled by the PC program itself.

The ERR terminal can be used by the PC application program to indicate erroneous values or other fatal errors.

2. Limit checking

No limit checking is performed by the system when VALUE is updated. All limit checking is assumed to be performed in the external controller (for example Advant Controller 110). The limit check terminals are only included for display purposes in the Advant Station 500 Series Operator Station.

The EN_H2, EN_H1, EN_L1 and EN_L2 terminals is set by default to enable external events for all limits. The limits is best configured according to the corresponding AIC element in the external controller. Note that if a limit is not enabled in the AI Event element and an external event is received for this limit, the event will not be handled by the Operator functions.

The HI_LIM2, HI_LIM1, LO_LIM1 and LO_LIM2 terminals can be configured to the same limit values as specified in the corresponding event generator, for example the AI Calculated element in Advant Controller 110. The limits are only used for display purposes in the Advant Station 500 Series Operator Station.

3. Event handling

As explained above is the events supposed to be generated by an external controller and received by object, if it is connected to the Event Set communication (see Event Set (Receive)). The event handling is an Operator function.

Note that all events are lost (not sent to the Operator Station) when the BLOCKED terminal is set to 1.

To disable the flow of time tagged events completely, you set ACT = 0. This excludes the element from event processing.

Group Alarm

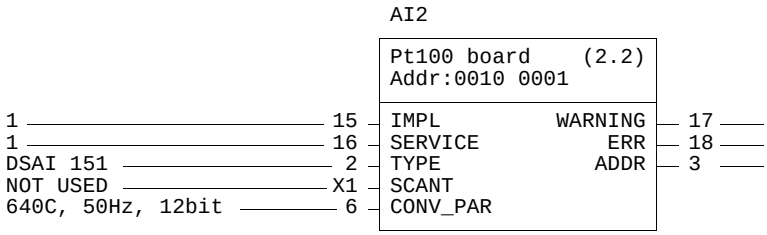
The data base element has a possibility to connect event signals, received via the event transfer function of Advant Fieldbus 100 or RCOM, to Group Alarm. Since it is very difficult (sometimes impossible) to guarantee correct order of coming and going alarms, which is necessary for the group alarm function, the recommendation is **not to use the connection to Group Alarm**.

Pt100 board AIPT

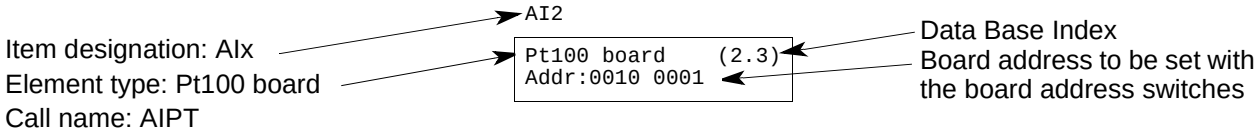
Summary

The Pt100 board data base element AIPT holds the data values of the terminals associated to an analog input board for temperature transducers of Pt100 type. The element is superior to the signal elements associated to the Pt100 analog input channels of the board.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
15	IMPL	user	1	B(r)	0=the board is spare 1=the board is **IMPL**emented	–
16	SERVICE	user, dialog	1	B(r/w)	The in-**SERVICE** terminal controls/ shows whether the board is in service or has been taken out of service.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
2	TYPE	user	DSAI_ 151	–	Board **TYPE**: DSAI_145, DSAI_146 or DSAI_151.	TYPE must be selected when creating the elements. The full name including "_" must be entered. When DSAI_145 or DSAI_146 is filled in on the terminal the DB element will answer with DSAI_145/146.
X1	SCANT	–	NOT USED	–	**SCAN** Time interval. Not used.	–
6	CONV_PAR	user	640C, 50Hz, 12bit	–	The normal signal range can be entered as **CONV**ersion **PAR**ameter, when creating the element. It will be used as a default value for subordinated Temp(Pt100) elements.	Refer to the table for available Conversion parameters.
17	WARNING	system	–	B(r)	Not used.	–
18	ERR	system	–	B(r)	**ERR**or flag indicating non-functional board.	–
3	ADDR	system	–	–	Board location within the I/O **ADDR**ess range, presented in decimal format.	Cannot be changed.

Signal Ranges

Conversion Parameter

Temperature Range	Notation as
–40..+40 °C	40 °C (1)
–100..+320 °C	320 °C
–200..+640 °C	640 °C

(1) Not for DSAI 145

Function

The integration time of the A/D-converter is adapted to the power frequency to suppress distortion.

Enter Power frequency: 20 Hz, 30 Hz, 50 Hz or 60 Hz. Conversion resolution: 12 bit or 13 bit.

The 3 values must be entered together. Units or comma is not necessary, but the order must be as given (Temp., Hz, bits).

Hardware Function

The Resistive temperature transducers are connected to the connecting unit which contains overvoltage protection and hf-filter.

The board contains:

- current generator for measuring current
- a multiplexer that selects input
- a measuring amplifier
- an A/D converter.

The multiplexer and A/D converter are CPU controlled.

The reference channels, one accurate resistor for each current loop, calibrate the measurement inputs. If the voltage drop over the reference is out of range, the ERRor flag is set.

A red LED indicates fault or not initiated board. A yellow LED indicates A/D conversion (board channel).

Address selection: The address to be set is given in the head of the data base element.

Example: the first analog input board is located at hexadecimal address 20=0010 0000 (that is address bit 5 set).

Refer to the manuals *Advant Controller 410 User's Guide* and *Advant Controller 450 User's Guide* for more detailed information regarding the boards.

Board Set-up Procedure

With the data base element you set up the board for the process communication program.

The board set-up procedure includes:

1. Implementation
2. Disabling
3. Board type selection
4. Self test and board change test
5. Default signal range
6. Error handling.

1. Implementation

During system INIT the board and its signals are included in the tables that define the process data communication, PDC. If you set IMPL=0 on the board, the board and the channels associated with it, are removed from the PDC's tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the board. This saves some but not all CPU load. This function will be used if a board must be unplugged during operation. If Operator Station is included in your system - see the Advant Station 500 Series Operator Station manuals.

3. Board type selection

Board type DSAI_145 has 31 inputs, 3-wire. Board type DSAI_151 has 14 inputs, 4-wire.

The full name of the board, including "_" must be entered. TYPE must be selected when creating the elements.

Once created, a board type can be changed if the new board type has the same number of channels as the old one. If not, the data base element and all the subordinated signal elements must be deleted.

4. Self test and board change test

The board performs a self-test at 5 seconds intervals using the reference channels (on-board inputs). This test performs calibration of the inputs. At the same time, a test that enables board change during operation is performed.

5. Default signal range

As a typing aid, you may enter the normal signal range for this board, as CONV_PAR, when creating the element. This range will be the default range for all subordinated signal elements. CONV_PAR in this element is used when creating signal elements.

6. Error handling

The ERR terminal is set in AI board element, if the board is determined non-functional by the supervision function.

Typical errors are non-existent, malfunctioning or improperly strapped hardware or software or data base errors.

The ERR terminal can be connected to the PC program for desired function.

ERR is reset, if hardware error, automatically within 5 seconds of replacement of the non-functional board.

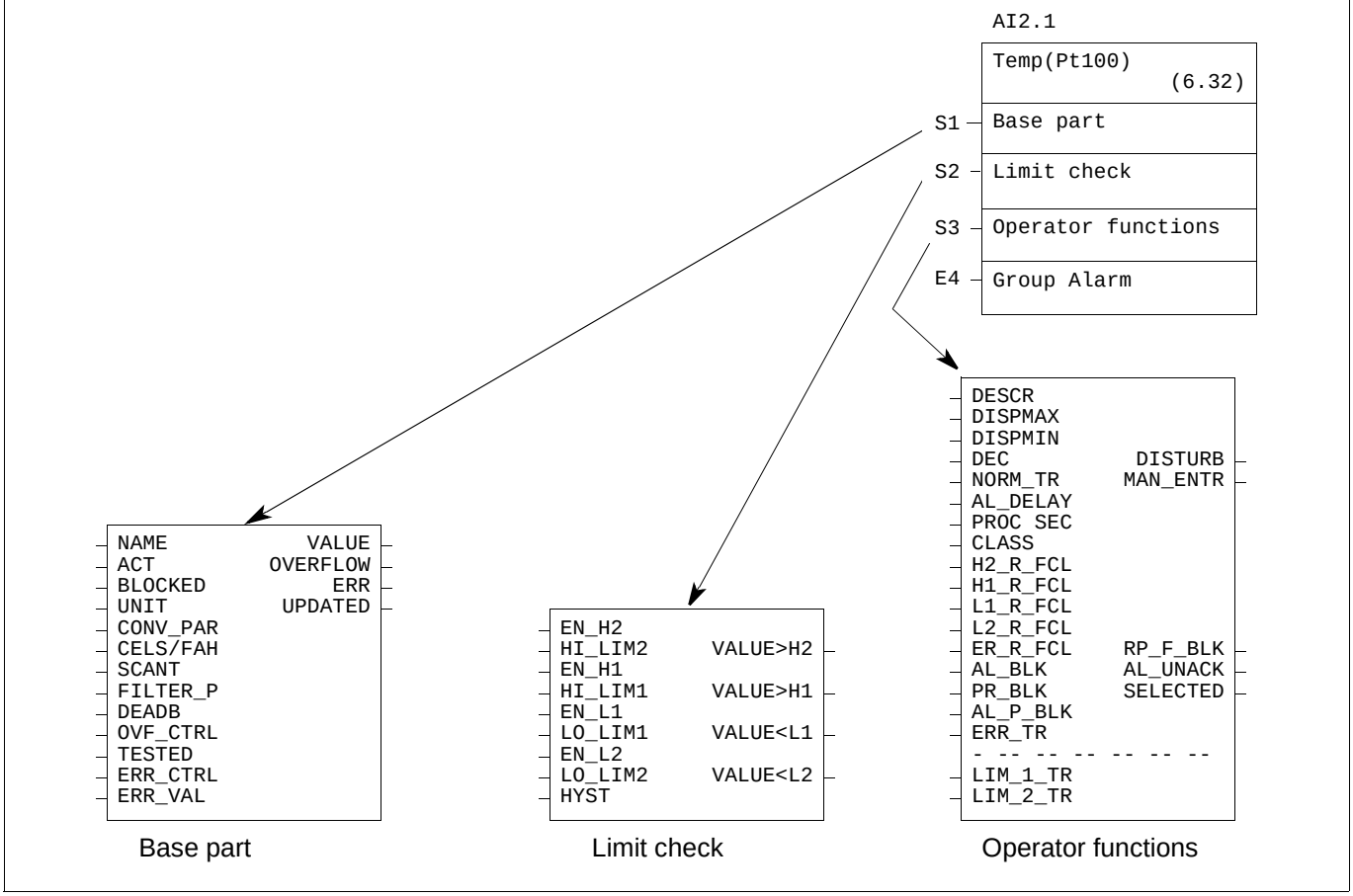
The fault lamp on the board is lit when ERR is set (if the CPU still has access to the board).

Temp(Pt100) AIPTS

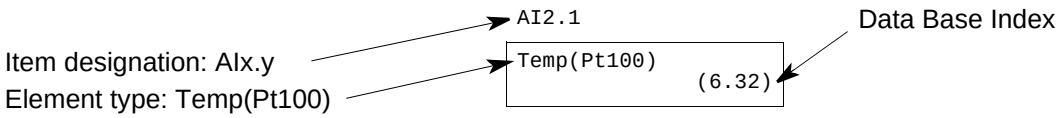
Summary

The Temp(Pt100) data base element AIPTS holds the data values of the terminals associated to an analog input channel for temperature transducers of Pt100 type. The element is subordinate to the Pt100 board data base element for the input board in which the input channel is implemented. For information about the extension parts of Group Alarm see data base element Group Member.

Overview

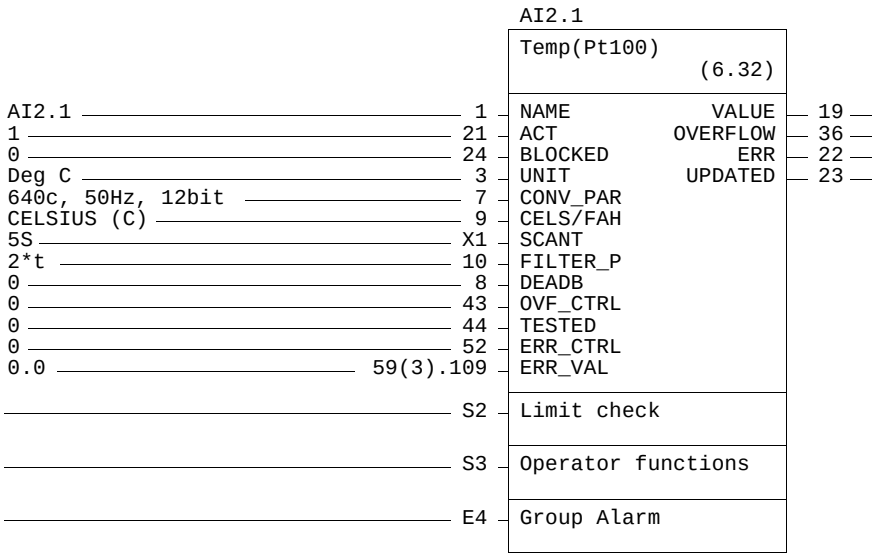


Head



Item designation: AIx.y
Element type: Temp(Pt100)
Call name: (AIPTS)

Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AIx.y	–	Each Temp(Pt100) signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed. See table regarding DB-item Designation vs. Hardware Channel.
21	ACT	user	1	B(r)	1=the signal is **ACT**ive (scanned by the data acquisition program).	–
24	BLOCKED	dialog	0	B(r/w)	1=updating of signal VALUE is **BLOCKED**.	–
3	UNIT	user	Deg C	–	The measured value **UNIT** in engineering units.	Max. 6 characters shown in Operator Station and data base element.
7	CONV_PAR	user	from Pt100 board	–	The normal signal range entered as **CONV**ersion **PAR**ameter.	See the table for available Conversion parameters.
9	CELS/FAH	user	CELSIUS (C)	–	CELS/FAH can be changed to give VALUE in degrees **FAH**renheit instead of default **CELS**ius. CELSIUS (C), FAHRENHEIT (F)	–

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
X1	SCANT	user	5s	–	**SCAN T**ime interval for input. See Introduction, section ”Allowed SCANT values”.	–
10	FILTER_P	user	2∗T	–	Input **FILTER**ing in software. Filter **P**arameter depends on SCANT(T), 0,2∗T, 4∗T, 8∗T, 16∗T, 255∗T.	Hardware filtering is obtained through integrating A/D-conversion.
8	DEADB	user	0	B(r/w)	Signal **DEADB** and limit percentage. If the signal variation exceeds the limit, the value will be updated.	Refer to Section ”DEADB values” for available ranges. See Function ”3. Variation Control”.
43	OVF_CTRL	user	1	B(r/w)	**OV**er**F**low **C**on**TR**o**L**. 1=alternative overflow handling.	See Function ”7. Error handling”.
44	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
52	ERR_CTRL	user	0	B(r/w)	**ERR**or **C**on**TR**o**L**. 0=Value is frozen when error occurs. 1=Value is set to the value of ERR_VAL when error occurs.	–
59(3).109	ERR_VAL	user	0.0	R(r/w)	**ERR**or **VAL**ue. Value to be set when error occurs and ERR_CTRL=1.	–
19	VALUE	system	–	R(r/w)	Process **VALUE** in engineering unit, Celsius or Fahrenheit.	Up-dated only for significant change of the input signal, but not immediately after change of CELS/FAH, FILTER_P or DEADB.
36	OVERFLOW	system	–	B(r/w)	1=dynamic indication of **OVERFLOW**.	See Function ”7. Error handling”.
22	ERR	system	–	B(r/w)	1=Hardware or configuration **ERR**or or signal overflow.	–
23	UPDATED	system	–	B(r/w)	1=system indicates that VALUE has been **UPDATED**.	Cannot be affected by user.

Signal Ranges

Conversion Parameter

Temperature Range	Notation as	Note
–40..+40 °C	40 °C	Not for DSAI 145
–100..+320 °C	320 °C	–
–200..+640 °C	640 °C	–

The integration time of the A/D-converter is adapted to the power frequency to suppress interference.

Enter power frequency 20 Hz, 30 Hz, 50 Hz or 60 Hz. Conversion resolution. 12 bit or 13 bit.

The 3 values must be entered together. Units or comma is not necessary, but the order must be as given (Temp., Hz, bits).

Note that the power frequency must be entered on the board through strapping.

DEADB Values

Available variation limits are:

0	0.025%	0.1%	0.4%	1.6%	–1 (updated at each scan)
0%	0.05%	0.2%	0.8%	3.2%	

The DEADB is set in percentage of 2 x the nominal positive max value of the used measuring range.

DB Item Designation vs. Hardware Channels

The physical board channels ch1 (DSAI 145) and ch9 (DSAI 151) are reference channels and may not be used for measured process values.

The item designations in the data base and the channel numbers of the boards are displaced according to the table.

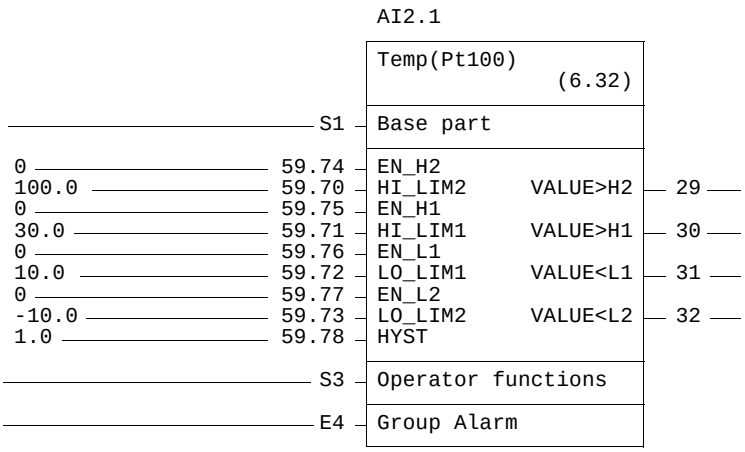
Displacement

DB-ref.	Physical board DSAI_145	Channel (ch) DSAI_151
–	1 ref	1 ref
.1	2	2
.2 : .7	3 : 8	3 : 8
–	–	9 ref
.8	9	10

Displacement

DB-ref.	Physical board DSAI_145	Channel (ch) DSAI_151
.9 : .14 : .31	10 : 15 : 32	11 : 16 : –

Limit check



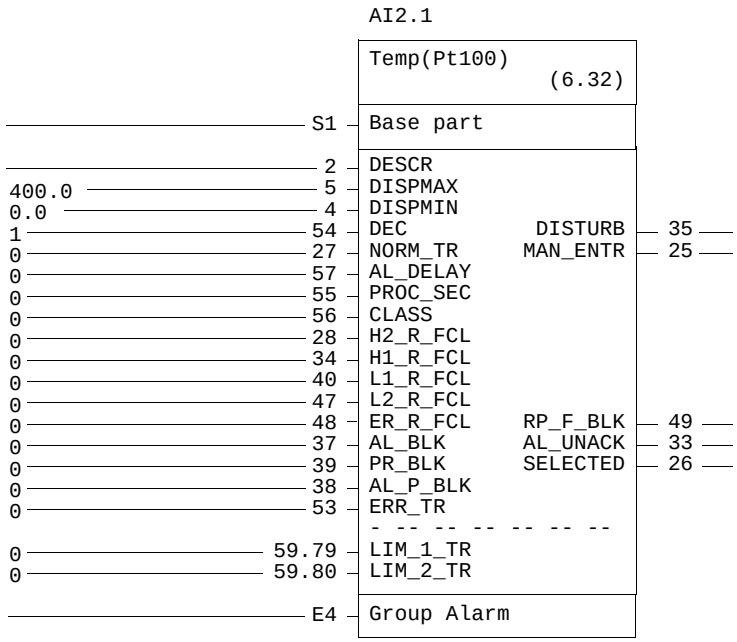
Terminal Description, Limit check

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
59.74	EN_H2	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **2**.	–
59.70	HI_LIM2	user	100.0	R(r/w)	**HI**gh **LIM**it no. **2** in engineering unit.	Accepted value HI_LIM2 > HI_LIM1.
59.75	EN_H1	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **1**.	–
59.71	HI_LIM1	user	30.0	R(r/w)	**HI**gh **LIM**it no. **1** in engineering unit.	Accepted value LO_LIM1 < HI_LIM1 < HI_LIM2.
59.76	EN_L1	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **1**.	–
59.72	LO_LIM1	user	10.0	R(r/w)	**LO**wer **LIM**it no. **1** in engineering unit.	Accepted value HI_LIM1 > LO_LIM1 > LO_LIM2.
59.77	EN_L2	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **2**.	–

Terminal Description, Limit check (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
59.73	LO_LIM2	user	–10.0	R(r/w)	**LO**wer **LIM**it no. **2** in engineering unit.	Accepted value LO_LIM2 < LO_LIM1.
59.78	HYST	user	1.0	R(r/w)	**HYST**eresis for limit check in engineering units.	The hysteresis is located within each limit.
29	VALUE>H2	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **2**.	Cannot be affected by user.
30	VALUE>H1	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **1**.	Cannot be affected by user.
31	VALUE<L1	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **1**.	Cannot be affected by user.
32	VALUE<L2	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **2**.	Cannot be affected by user.

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Max. 20 characters.
5	DISPMAX	user	400.0	R(r/w)	**MAX**imum value **DISP**layed.	Derives scaling for graphic presentation.
4	DISPMIN	user	0.0	R(r/w)	**MIN**imum value **DISP**layed.	Derives scaling for graphic presentation.
54	DEC	user	1	–	The number of **DEC**imals to be presented by Operator Station.	0 - 6 decimals.
27	NORM_TR	user	0	B(r)	1=**NORM**al event driven updating on displays and lists in Operator Station.	0=no event driven updating in Operator Station.
57	AL_DELAY	user, PC	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds: 1 - 127	0=no delay.
55	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
56	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
28	H2_R_FCL	user	0	B(r)	**H**igh limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H2 limit alarms.	–
34	H1_R_FCL	user	0	B(r)	**H**igh limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H1 limit alarms.	–
40	L1_R_FCL	user	0	B(r)	**L**ow limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L1 limit alarms.	–
47	L2_R_FCL	user	0	B(r)	**L**ow limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L2 limit alarms.	–
48	ER_R_FCL	user	0	B(r)	**ER**ror **R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating error alarms.	–

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
37	AL_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
39	PR_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **PR**intout in Operator Station.	–
38	AL_P_BLK	PC	0	B(r/w)	ALarm Period BLocK. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC-program.	–
53	ERR_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the **TR**eatment in Operator Station of signal **ERR**ors, and operator commands.	Recommended settings 0=No event reporting 2=Event reporting including alarm handling
59.79	LIM_1_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H1 and L**1 LIM**it **TR**ansgressions.	Recommended settings 0=No event reporting 3=Event reporting, no alarm handling 4=Event reporting, incl. alarm handling
59.80	LIM_2_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H2 and L**2 LIM**it **TR**ansgressions.	Recommended settings 0=No event reporting 3=Event reporting, no alarm handling 4=Event reporting, incl. alarm handling
35	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indication whether a state of alarm exists in the element.	Cannot be affected by user.
25	MAN_ENTR	system	–	B(r/w)	1=Flag indication that the signal VALUE has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	–
49	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**lag **BL**oc**K**. Flag indicating that a repeating alarm is present, but that it has been blocked in the element.	–
33	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	–
26	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–

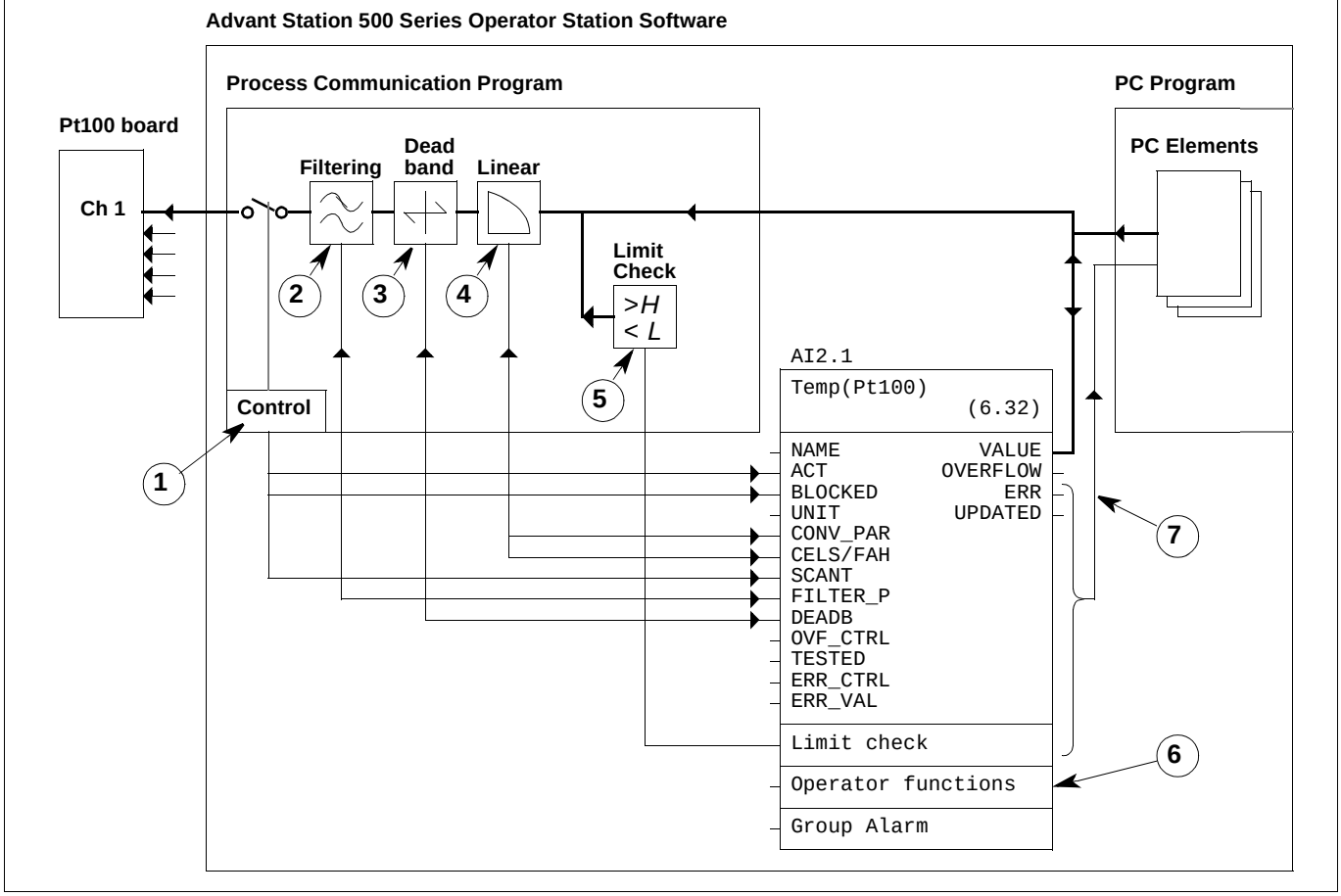
Function

The Temp(Pt100) data base element is an analog input for resistive temperature transducers of Pt100 type. With the element you control the signal processing executed by the process communication program. You can also define limit checking and the interface to the Advant Station 500 Series Operator Station system.

The system processing includes:

1. Updating
2. Filtering
3. Variation Control (deadband)
4. Linearization
5. Limit check
6. Operator Station functions
7. Error handling.

Function of Temp(Pt100) Terminals



1. Updating

The temperature signal is converted and read at intervals determined by the terminal SCANTime. You should set SCANT to the requirements of your system.

If you set BLOCKED, the data acquisition stops, allowing manual entry of VALUE.

To disable the data acquisition completely, you set ACTivated to 0. This excludes the input from processing.

2. Filtering

You may select software filtering of the process value. The FILTER_Parameter time constant is a value depending on SCAN-Time as indicated by the value. For example 2*T at a scan-time of 10 seconds means a time constant of 20 seconds. This is the time when 63% of a step change has been transferred to the VALUE. The filter corresponds to a one-pole low-pass filter. FILTER_P=0 disables the software filter.

3. Variation Control

With DEADBand you select the accuracy of the updating. If the input value has not changed more than the DEADBand, since the previous update, no updating or further processing will take place. This function is valuable in reducing signal noise and unnecessary data processing.

DEADB=0 means updating at each change of input reading (that is using the full resolution of the A/D converter, but no unnecessary updates).

DEADB= –1 forces update at each reading.

Only in special cases need a deadband be used for this type of input. (If this is done please note that deadband is in percent before linearization.)

4. Linearization

Linearization according to DIN 43760 and conversion to a temperature measurement value (Celsius or Fahrenheit).

The CELS/FAH terminal selects representation in degrees Celsius (Centigrade) or Fahrenheit. Note that UNIT should be changed separately. VALUE (and limits, DISPMAX and DISPMIN) are then expressed in this unit.

CONV_PAR selects measuring range versus resolution and optimizes the linearization.

Refer to the table for Conversion parameters for available signal ranges.

Always enter this range in degrees Celsius.

Two more values must be entered in CONV_PAR: (Note that values can be entered without unit or comma, but the 3 values must always be entered.) Suppression frequency should be adapted to the ambient power supply frequency to suppress AC noise.

5. Limit check

In the limit check part of the data base element you determine whether and how a limit check will be performed. The result is stored in the output terminals and is thus available to PC and other programs. If the NORM_TReat terminal is set to 1, each change in limit check status is also sent to the Advant Station 500 Series Operator Station.

The main use of this function is for Advant Station 500 Series Operator Station presentation, but it is also a convenient alternative to limit checking with PC element COMP-R.

6. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation and functional unit documentation.

7. Error handling

The control function of a Pt100 input indicates errors via the ERR and OVERFLOW terminals. Four different types of errors can occur, two caused by the system, and two caused by the operator.

1. ERR is set in the Pt100 board element

   This occurs if the board function is defined non-functional by the supervision function. This can be caused by missing, malfunctioning or incorrectly strapped hardware, errors in software or data base.

   ERR in a Pt100 board is copied to the error handling functions of all channels and the error flag ERR is set.

   VALUE is not updated if this occurs and the old value is retained. The LED on the board shows steady light. ERR is reset, if hardware error, within 5 seconds of replacement of the non-functional board.

2. Out-of-range error

   For measurement range -40 °C – 40 °C:

   ERR is set if OVERFLOW is set and OVF_CTRL is 0.

   For measurement ranges -100 °C – 320 °C and -200 °C – 640 °C:

   ERR is set if the temperature value goes outside the present measurement range.

   OVERFLOW is set if the input signal goes over or under (under only for range -40 °C – 40 °C) the maximum or minimum signal range that the hardware can handle.

   Behavior of OVERFLOW, ERR and VALUE, if the temperature value goes outside the present measurement range, see the table on the following page.

   Detection of out-of-range signals can give indirect information that a transducer has been disconnected, cut electrical connections, other hardware errors or system errors on signal level.

   ERR and OVERFLOW are reset when the error is corrected.

3. ERR is set when the SERVICE terminal has been set to 0 by the operator

   The LED does not show any light.

   ERR is reset when SERVICE is set to 1 again.

4. The board was not implemented during the latest system init

   The LED on the board front shows steady light.

   ERR is reset by setting IMPL in Pt100 board.

The ERR and OVERFLOW terminals of the Pt100 element and the ERR terminal of the Pt100 board element can be connected to a PC program where the desired function may be built.

Behavior of OVERFLOW, ERR and VALUE, if the temperature value goes outside the present measurement range

Temperature Value	OVF_CTRL	OVERFLOW	ERR	VALUE
Range -40 °C – 40 °C:				
> 40.95	0	1	1	Frozen
> 40.95	1	1	0	40.95
< –40.28	0	1	1	Frozen
< –40.28	1	1	0	–40.28
Range -100 °C – 320 °C or -200 °C – 640 °C:				
> max range	0	0	1	Range max
> max range	1	0	1	Range max
< min range	0	0	1	Range min
< min range	1	0	1	Range min
>> max range	0	1	1	Frozen
>> max range	1	1	1	Range max

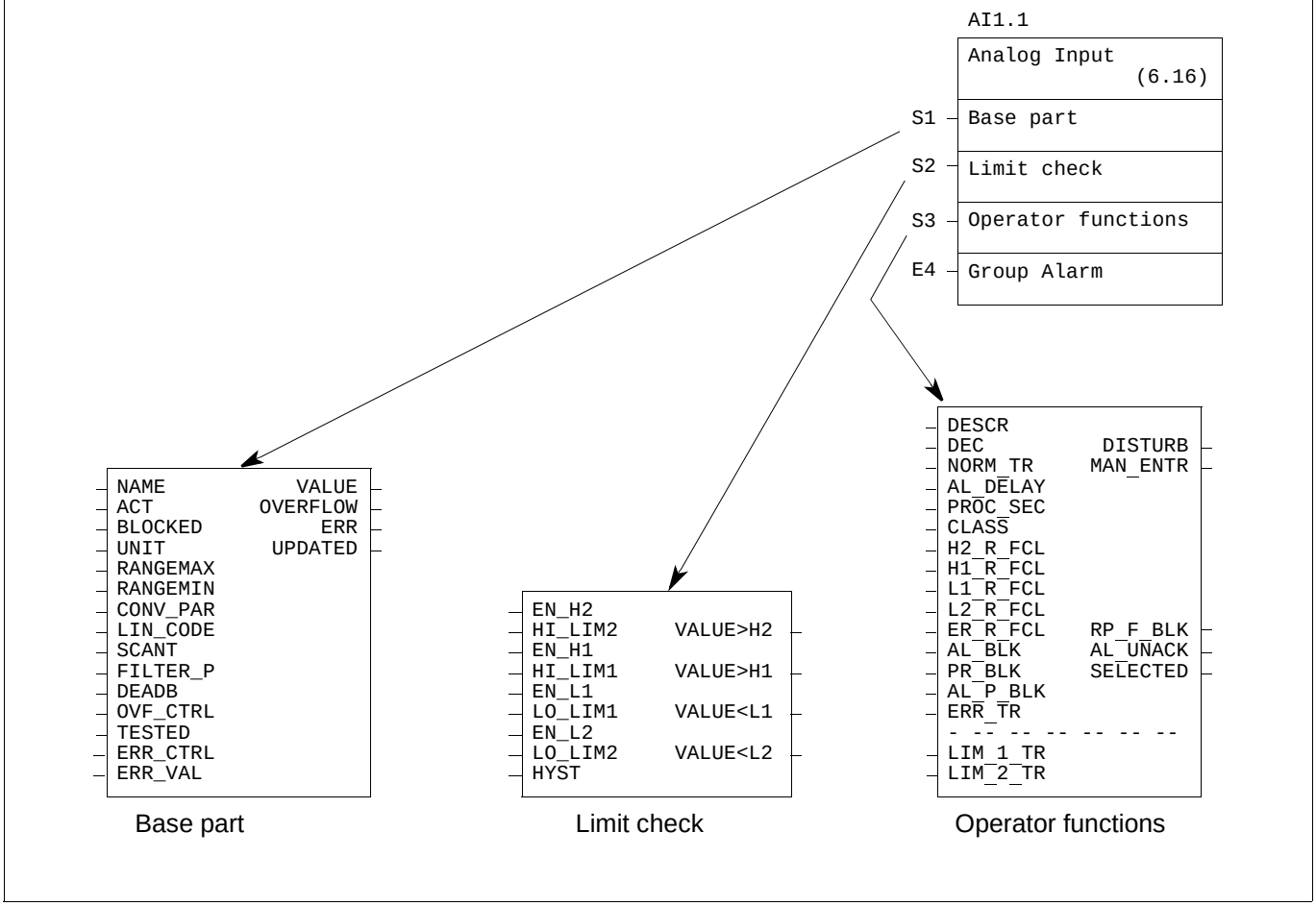
Analog Input AIS, AIXS, AIXRS

Summary

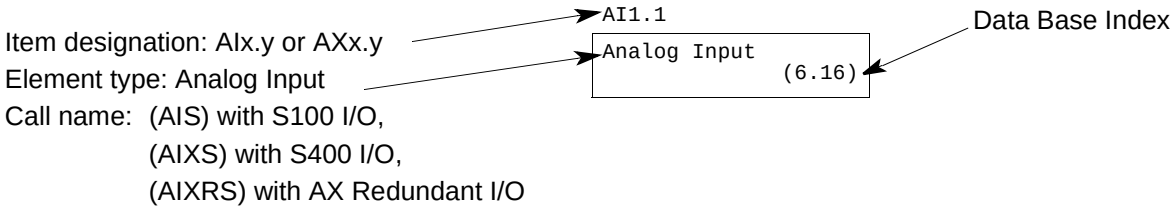
The data base element Analog Input is subordinate to the AI board data base element, the AX unit data base element or the AX Redundant data base element.

For information about the extension parts of Group Alarm see data base element Group Member.

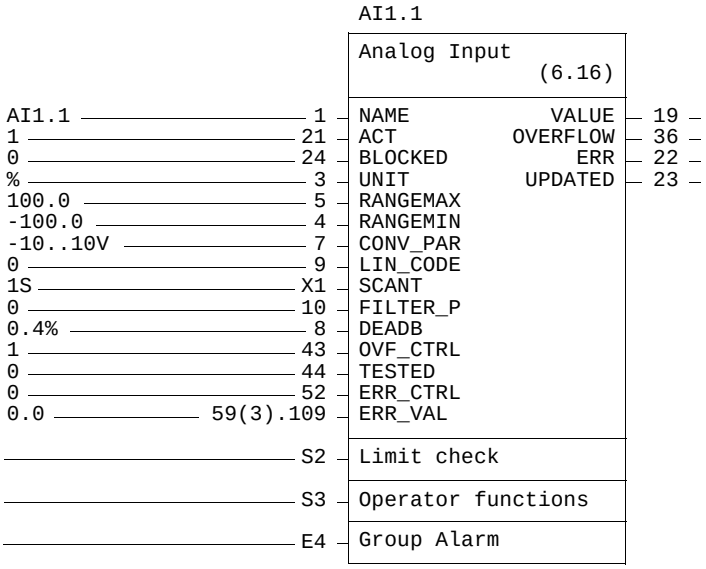
Overview



Head



Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AIx.y, AXx.y *or* AXRx.y	–	Each Analog Input signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
21	ACT	user	1	B(r)	1=the signal is **ACT**ive (scanned by the data acquisition program).	–

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
24	BLOCKED	dialog	0	B(r/w)	1=updating of signal VALUE is **BLOCKED**.	–
3	UNIT	user	%	–	The signal **UNIT** in engineering unit. Empty string is entered as a dot (.).	Max. 6 characters shown in Operator Station and data base element.
5	RANGEMAX	user	100.0	R(r/w)	**RANGE MAX**imum input in engineering units (e.g. 100 kg) for maximum input signal (e.g. 10 Volt).	Derives scaling.
4	RANGEMIN	user	–100.0	R(r/w)	**RANGE MIN**imum input in engineering units (e.g. 0 kg) for minimum input signal (e.g. –10 Volt).	Derives scaling. Default for AIXRS: 0.0.
7	CONV_PAR	user	from AI board or –10..10V	–	The normal signal range entered as **CONV**ersion **PAR**ameter. Refer to section “Signal Ranges” for available signal ranges in Volts or mA.	The connection units must be strapped for voltage or current.
9	LIN_CODE	user	0	–	**LIN**earization **CODE**=1 gives a linearization of signal with square characteristic.	Not available for AX with S400 I/O.
X1	SCANT	user	1s	–	**SCAN T**ime interval for input. See Introduction, section ”Allowed SCANT values”.	Modification is carried out at the next scan.
10	FILTER_P	user	0	–	Input **FILTER**ing in software. Filter **P**arameter depends on SCANT(T), 0×T, 2×T, 4×T, 8×T, 16×T, 255×T.	The AI board performs hardware filtering.
8	DEADB	user	0.4%	–	Signal **DEADB**and limit percentage. If the signal variation exceeds the limit, the value will be updated.	Refer to section DEADB values for available ranges. The DEADB is set in percentage of 2 x the nominal positive max value of the used measuring range.
43	OVF_CTRL	user	1	B(r/w)	1=alternative **OV**er**F**low **C**on**TR**o**L** handling.	See Function ”8. Error handling”.
44	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
52	ERR_CTRL	user	0	B(r/w)	**ERR**or **C**on**TR**o**L**. 0=Value is frozen when error occurs. 1=Value is set to the value of ERR_VAL when error occurs.	–
59(3).109	ERR_VAL	user	0.0	R(r/w)	**ERR**or **VAL**ue. Value to be set when error occurs and ERR_CTRL=1.	–

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
19	VALUE	system	–	R(r/w)	Process **VALUE** in engineering unit.	–
22	ERR	system	–	B(r/w)	1=Hardware or configuration **ERR**or or signal overflow.	–
36	OVERFLOW	system	–	B(r/w)	1=dynamic indication of **OVERFLOW**.	See Function ”8. Error handling”.
23	UPDATED	system	–	B(r/w)	1=system indicates that VALUE has been **UPDATED**.	–

Signal Ranges

Conversion Parameters, S100 I/O

Voltage	–10.. 10 V	–5.. 5 V	–2.5.. 2.5 V	–1.25.. 1.25 V	0.. 10 V	0.. 5 V	0.. 2.5 V	0.. 1.25 V	2.. 10 V	1.. 5 V	0.5.. 1.25 V	0.5.. 2.5 V	0.25.. 1.25 V
Current	–20.. 20 mA	–10.. 10mA	–5.. 5 mA	0.. 20 mA	0.. 10 mA	0.. 5 mA	4.. 20 mA	2.. 10 mA	1.. 5 mA	–	–	–	–

Conversion Parameters, S400 I/O

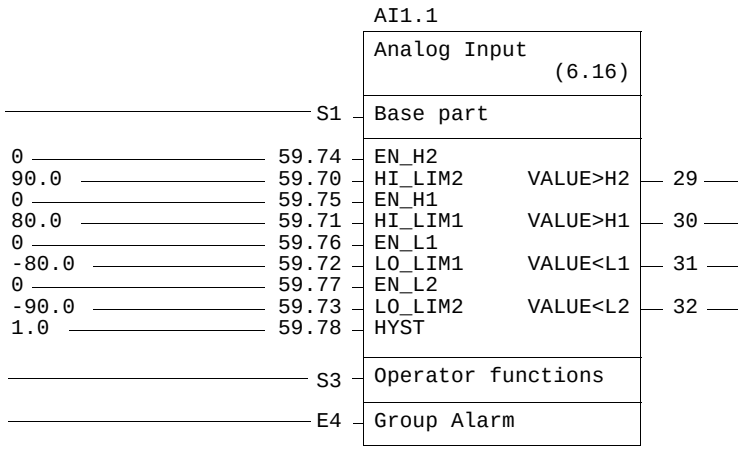
Voltage	–10.. 10 V	0.. 10 V	2.. 10 V
Current	–20.. 20 mA	0.. 20 mA	4.. 20 mA

DEADB Values

Available variation limits are:

0	0.05%	0.2%	0.8%	3.2%
0.025%	0.1%	0.4%	1.6%	–1 (updated at each scan)

Limit check



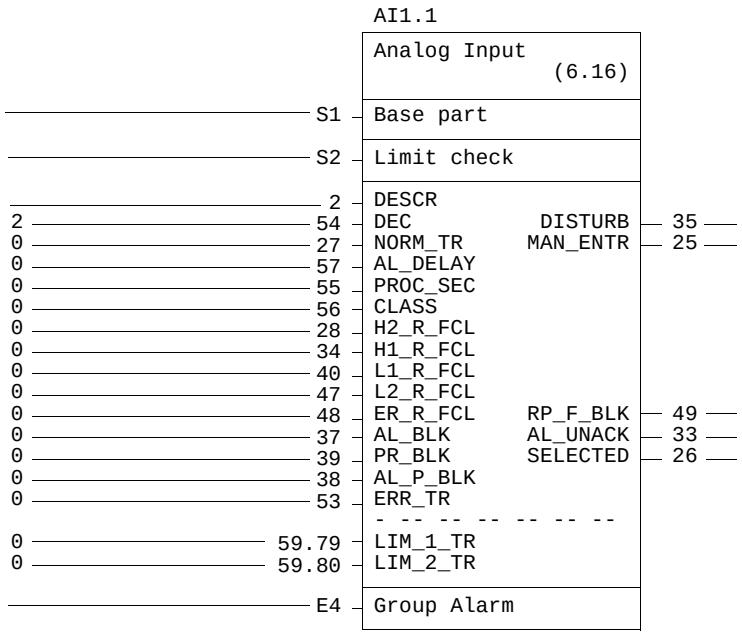
Terminal Description, Limit check

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
59.74	EN_H2	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **2**.	–
59.70	HI_LIM2	user	90.0	R(r/w)	**HI**gh **LIM**it no. **2** in engineering unit.	Accepted value HI_LIM2 > HI_LIM1.
59.75	EN_H1	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **1**.	–
59.71	HI_LIM1	user	80.0	R(r/w)	**HI**gh **LIM**it no. **1** in engineering unit.	Accepted value LO_LIM1 < HI_LIM1 < HI_LIM2.
59.76	EN_L1	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **1**.	–
59.72	LO_LIM1	user	–80.0	R(r/w)	**LO**wer **LIM**it no. **1** in engineering unit.	Accepted value HI_LIM1 > LO_LIM1 > LO_LIM2.
59.77	EN_L2	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **2**.	–
59.73	LO_LIM2	user	–90.0	R(r/w)	**LO**wer **LIM**it no. **2** in engineering unit.	Accepted value LO_LIM2 < LO_LIM1.
59.78	HYST	user	1.0	R(r/w)	**HYST**eresis for limit check in engineering units.	The hysteresis is located within each limit.
29	VALUE>H2	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **2**.	Cannot be affected by user.
30	VALUE>H1	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **1**.	Cannot be affected by user.

Terminal Description, Limit check (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
31	VALUE<L1	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **1**.	Cannot be affected by user.
32	VALUE<L2	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **2**.	Cannot be affected by user.

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Max. 20 characters. You may enter any information regarding the signal.
54	DEC	user	2	–	The number of **DEC**imals to be presented by Operator Station.	0 - 6 decimals.

Terminal Description, Operator functions (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
27	NORM_TR	user	0	B(r)	1=**NORM**al event driven updating on displays and lists in Operator Station.	0=no event driven up–dating in Operator Station.
57	AL_DELAY	user	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds: 1 - 127	0 = no delay.
55	PROC_SEC	user	0	I(r/w)	**PROC**ess **SE**CtIon is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
56	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
28	H2_R_FCL	user	0	B(r)	**H**igh limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H2 limit alarms.	–
34	H1_R_FCL	user	0	B(r)	**H**igh limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H1 limit alarms.	–
40	L1_R_FCL	user	0	B(r)	**L**ow limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L1 limit alarms.	–
47	L2_R_FCL	user	0	B(r)	**L**ow limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L2 limit alarms.	–
48	ER_R_FCL	user	0	B(r)	**ER**ror **R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating error alarms.	–
37	AL_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
39	PR_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **PR**intout in Operator Station.	–
38	AL_P_BLK	PC	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K**. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC-program or Engineering Station.	–

Terminal Description, Operator functions (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
53	ERR_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the **TR**eatment in Operator Station of signal **ERR**ors, and operator commands.	Recommended settings 0=No event reporting 2=Event reporting incl. alarm handling
59.79	LIM_1_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H1 and L**1 LIM**it **TR**ansgressions.	Recommended settings 0=No event reporting 3=Event reporting, no alarm handling 4=Event reporting, incl. alarm handling
59.80	LIM_2_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H2 and L**2 LIM**it **TR**ansgressions.	Recommended settings 0=No event reporting 3=Event reporting, no alarm handling 4=Event reporting, incl. alarm handling
35	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indication whether a state of alarm exists in the element.	Cannot be affected by user.
25	MAN_ENTR	system	–	B(r/w)	1=Flag indication that the signal VALUE has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	Cannot be affected by user.
49	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**lag **BL**oc**K**. Flag indicating that a repeating alarm is present in the element but that the indication has been blocked.	Cannot be affected by user.
33	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	Cannot be affected by user.
26	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	Cannot be affected by user.

Function

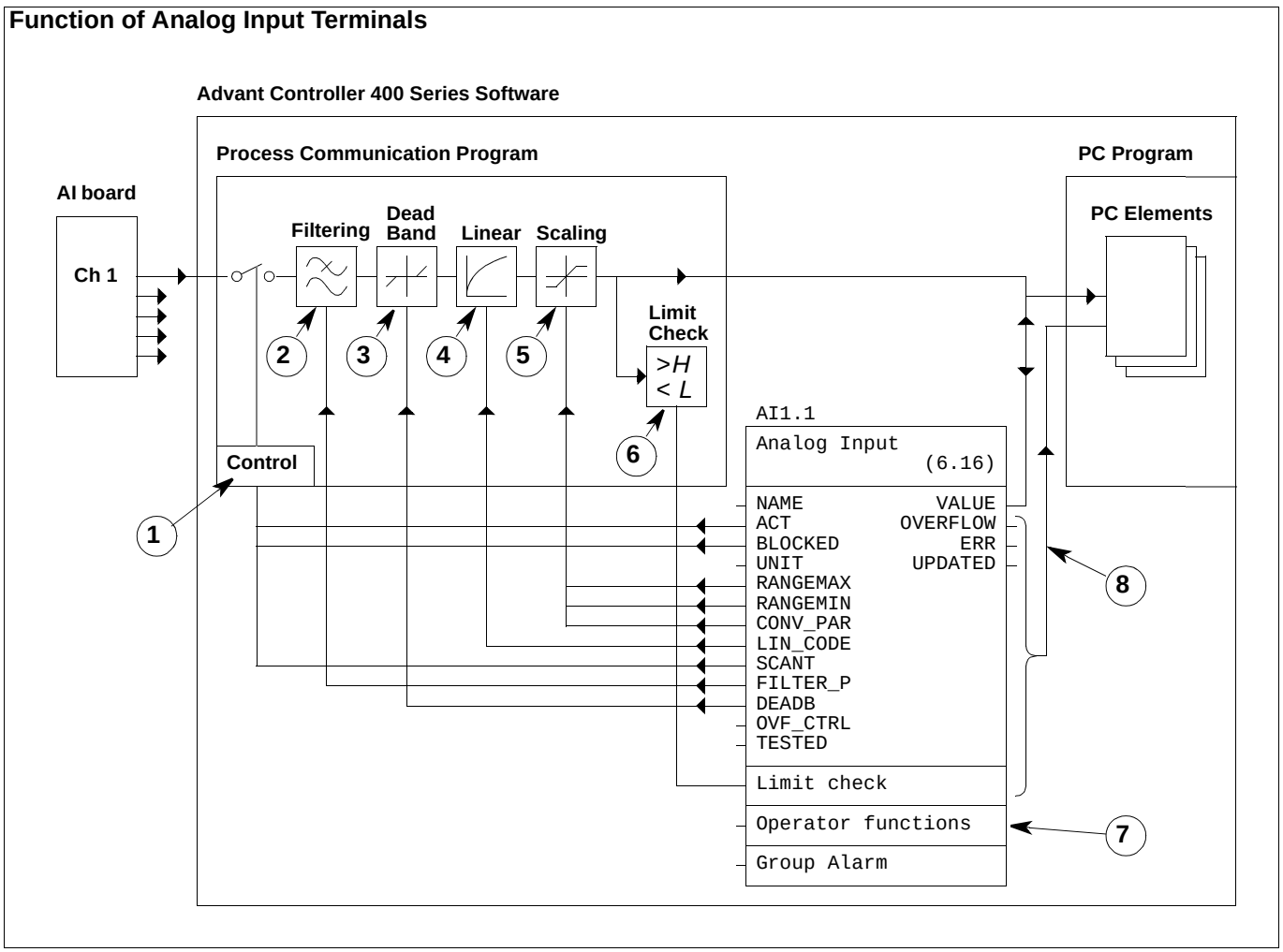
The Analog Input data base element defines a standard analog input signal. With the data base element you control the signal processing executed by the process communication program. You can also define limit checking and the interface to the Advant Station 500 Series Operator Station system.

The signal processing includes:

1. Updating
2. Filtering

3. Variation Control (deadband)
4. Linearization
5. Scaling
6. Limit Check
7. Operator Station functions
8. Error handling.

The figure below illustrates this process.



See *Notes on S400 I/O* for further information on applications using S400 I/O via ABB Master Fieldbus.

1. Updating

The analog signal is converted and read at intervals determined by the terminal SCANTime. You should set SCANT to the requirements of your system.

If you set BLOCKED, the data acquisition stops, allowing manual entry of VALUE.

To disable the data acquisition completely, you set ACTivated to 0. This excludes the input from processing.

2. Filtering

You may select software filtering of the process value in addition to the hardware board filter (8 Hz, τ =25 ms).

The FILTER_Parameter time constant is a quantity including SCANTime. Example: 2×T at a scan time of 100 ms gives a time constant of 200 ms. The filter corresponds to a one-pole low-pass filter.

FILTER_P=0 disables the software filter.

3. Variation control

With DEADBand you select the accuracy of the updating. If the input value has not changed more than the DEADBand, since the previous update, no updating or further processing will take place. This function is valuable in reducing signal noise and unnecessary data processing.

DEADBand=0 means updating at each change of input reading (that is using the full resolution of the A/D converter, but no unnecessary updates).

DEADBand= –1 forces update at each reading. (Can be used temporarily to get a new value after change of RANGEMAX and so on.)

4. Linearization

For special transducers with quadratic characteristics, e.g. flow measurement, you may select linearization using root extraction. This function is obtained with LIN_CODE=1.

Other types of linearization is obtained by PC programming (e.g. using arithmetic elements or function generator elements).

5. Scaling

All values are used in the system as engineering units. You enter scaling in two steps.

1. Nominal input range

With CONV_PAR you select the measuring range, using the nominal limits for the physical signal expressed in volts or mA.

See the section ”Signal ranges”. The CONV_PAR entered for the AI board will appear as default in the signal, to avoid unnecessary typing. See the manuals *Advant Controller 410 User’s Guide* and *Advant Controller 450 User’s Guide*, for strapping the hardware for voltage or current.

With RANGEMAX and RANGEMIN you determine the meaning of the signal in the engineering unit. The values to be entered are those corresponding to the signal limit values in the CONV_PAR. The engineering unit can be entered in UNIT, for documentation and display purposes.

2. Range example

If the input of 0 volt represent 0 m/s and 10 volts the speed of 50 m/s, set:

CONV_PAR=0..10 V

UNIT= m/s

RANGEMIN=0

RANGEMAX=50

VALUE will normally have the range 0-50 (±2%; that is –1..51 before out-of-range error occurs).

6. Limit check

In the Limit check part of the data base element you determine whether and how a limit check will be performed. The result is stored in the output terminals and is thus available to PC and other programs. If the NORM_TReat terminal is set to 1 each change in limit check status is also sent to the Advant Station 500 Series Operator Station.

The main use of this function is for Advant Station 500 Series Operator Station presentation, but it is also a convenient alternative to limit checking with PC element COMP-R.

7. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation and Functional unit documentation.

8. Error handling

The control function of an AI signal indicates errors via ERR and OVERFLOW. Four types of errors can occur, two that are caused by the system and two that are caused by the operator.

1. ERR in the AI, AX Redundant or AX unit element is set

   This occurs if the local or remote board function is determined non-functional. Typical causes of this type of error are: missing or faulty hardware, incorrectly installed hardware or errors in data base or software. For AX (ABB Master Fieldbus) the error could be in the bus communication.

   ERR in the AI board, AX Redundant or AX unit are copied to the error handling function of all channels and the error flag ERR is set to 1 for all channels. VALUE is not updated if this type of error occurs and the old value of this terminal is retained.

   The LED on the board front usually shows a steady light if the board is faulty.

   ERR is reset, if hardware error, within 5 seconds of replacement of the non-functional hardware unit.

2. Out of range values

   ”Overflow” or ”underflow” will occur if the A/D converter is given values out of its range. Different ways of handling this can be obtained through the use of the OVF_CTRL parameter. The parameter does not affect the handling of the electrical signal's passage through zero.

   See the table for Indication at Out-of-Range AI-signal for details of the relationships between the level of the electrical input signal, status indications and indication/limits of VALUE.

   Detection of out-of-range signals can give indirect information about various errors, e.g. disconnected transducers, cut electrical connections, loss of power supply or other hardware and system errors on signal level.

   ERR and OVERFLOW are reset when the error is corrected.

3. ERR is set when the SERVICE terminal in the AI board or AX Redundant element has been set to 0 by the operator

   The LED does not show any light. ERR is reset when SERVICE has been set to 1 again.

4. The board was not implemented at the latest system initiation

   The LED on the board front shows steady light if this type of error occurs.

   ERR is reset by entering IMPL in AI board or AX Redundant.

   The ERR and OVERFLOW terminals of the Analog Input element and the ERR terminal of the AI board and AX unit elements can be connected to PC programs where the desired function may be built.

Function (Notes on S400 I/O)

The data acquisition is handled by the remote AX unit that is connected to Advant Controller 400 Series via ABB Master Fieldbus. An AX unit's software configuration is determined through a comparable to an AI board element for an Analog Input unit located in the Advant Controller 400 Series framework.

All handling of the individual signal, and it's Analog Input element, is the same regardless of whether local or remote data acquisition is used. See below for a few minor differences and some advice on the use of S400 I/O.

1. Updating

The DSAX_452 variant of the AX unit is available in this edition of the system. This unit uses a slow integrating A/D-converter with a conversion time of ca. 50 ms/activated channel. The signals in a unit are converted in sequence and the number of activated channels (ACT=1) thus determine how often each conversion is repeated (cyclicity). This means that one should only activate the channels that are actually used to ensure the best possible cyclicity.

The mirroring of converted measurement data via Master Fieldbus to the control unit of the Advant Controller 400 Series does not require any significant time delay.

2. Linearization

Linearization for transducer with quadratic characteristics may not be selected.

3. Error handling

The ERRTYPE terminal of the AX unit element gives additional information on the fault.

Indication at out-of-range AI signal

Electrical signal	Parameter	Status indications				Value indication/limit	
		AI_BOARD		Analog input		S100 I/O	S400 I/O
(% of max. input)	OVF_CTRL	WARNING	ERR	OVERFLOW	ERR	VALUE (% of RANGEMAX - RANGEMIN)	
Unipolar (+)							
> 102.4%	0 1	1 0	0 0	1 1	1 0	(1) 2.4% over RANGEMAX	RANGEMAX RANGEMAX
< 10% ("floating zero")	0 1	0 0	0 0	0 0	1 1	12.5% below RANGEMIN (2) 12.5% below RANGEMIN (2)	RANGEMIN RANGEMIN
< 0%	0 1	0 0	0 0	0 0	0 0	RANGEMIN (3) RANGEMIN (3)	
< -8%	0 1	0 0	0 0	0 0	1 1	8% below RANGEMIN (2) (4) 8% below RANGEMIN (2) (4)	RANGEMIN RANGEMIN
Bipolar (±)							
> 102.4	0 1	1 0	0 0	1 1	1 0	(1) 2.4% over RANGEMAX (2)	RANGEMAX RANGEMAX
< -102.4	0 1	1 0	0 0	1 1	1 0	(1) 2.4% below RANGEMIN (2)	RANGEMIN RANGEMIN

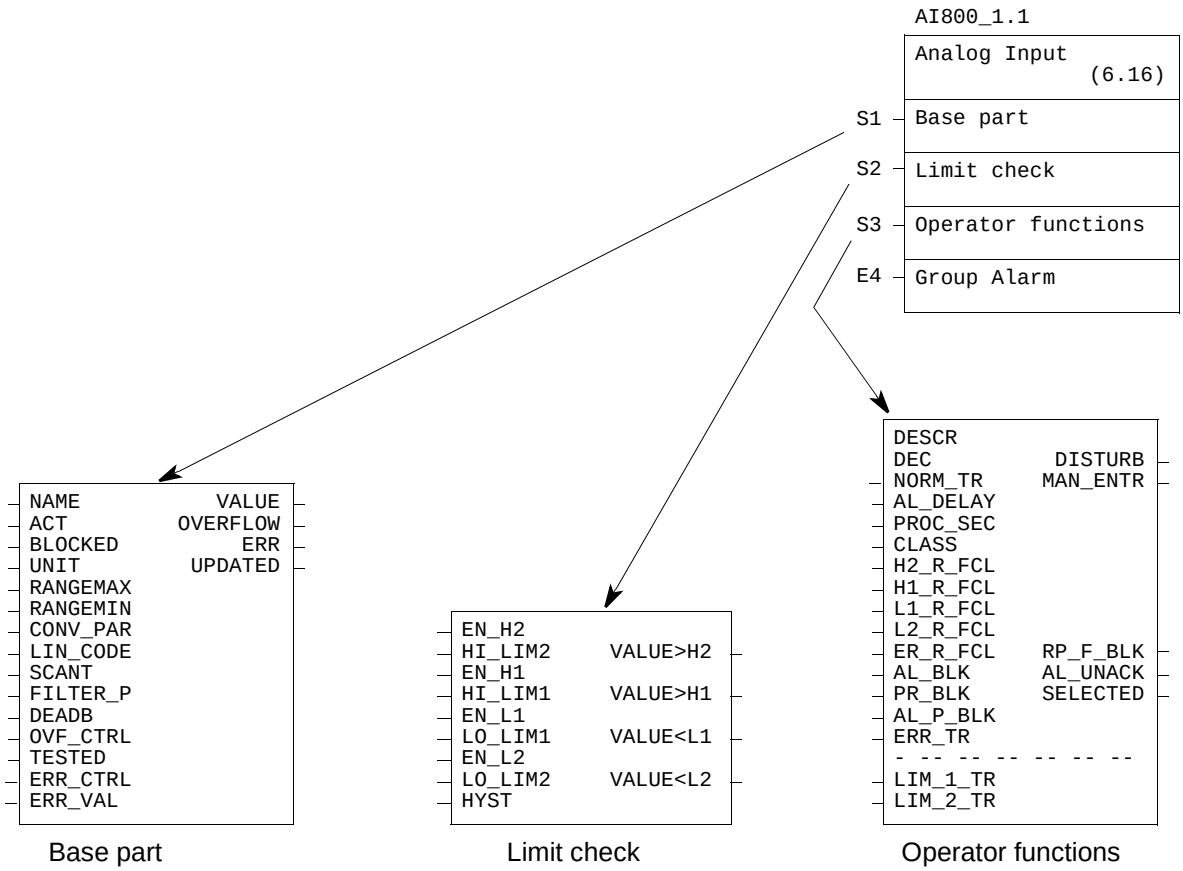
(1) Frozen at the value of the preceding sample, provided that OVERFLOW = 1 or set to the value of ERR_VAL if ERR_CTRL=1.
(2) Note: % of RANGEMAX - RANGEMIN
(3) Applies to DSAI 135 and DSAI 133. These boards cannot handle negative inputs.
(4) Applies to DSAI 110, DSAI 130 and DSAX 452 if the transducer can send negative signals.

Analog Input AIS810, AIS820, AIS890, AIS895

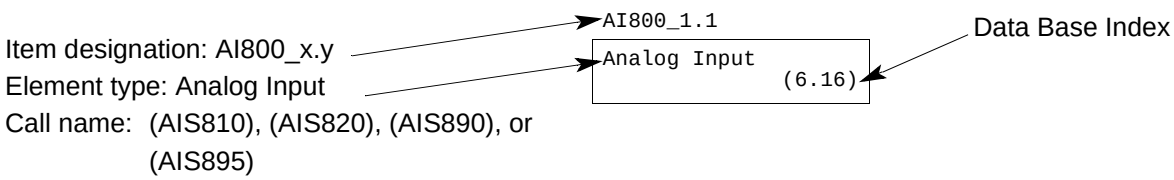
Summary

The data base element Analog Input is subordinate to the AI module data base element specifying an AI810, AI820, AI890 or AI895 hardware module.

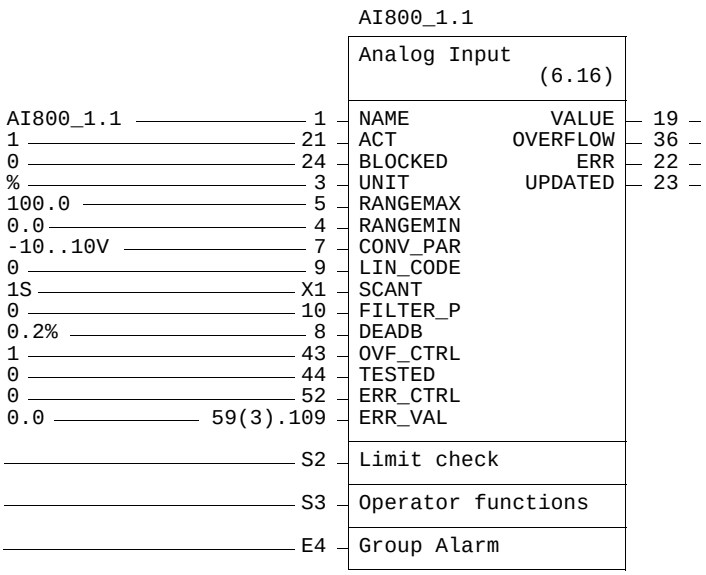
Overview



Head



Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AI800_ x.y	–	Each Analog Input signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
21	ACT	user	1	B(r)	1=the signal is **ACT**ive (scanned by the data acquisition program).	–
24	BLOCKED	dialog	0	B(r/w)	1=updating of signal VALUE is **BLOCKED**.	–
3	UNIT	user	%	–	The signal **UNIT** in engineering unit. Empty string is entered as a dot (.).	Max. 6 characters shown in Operator Station and data base element.
5	RANGEMAX	user	100.0	R(r/w)	**RANGE MAX**imum input in engineering units (e.g. 100 kg) for maximum input signal (e.g. 10 Volt).	Derives scaling.
4	RANGEMIN	user	0.0	R(r/w)	**RANGE MIN**imum input in engineering units (e.g. 0 kg) for minimum input signal (e.g. –10 Volt).	Derives scaling.

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
7	CONV_PAR	user	4..20mA	–	**CONV**ersion **PAR**ameter. **For AI810:** 0..20mA , 4..20mA , 0..10V , 2..10V , 0..20mA,LL , 4..20mA,LL , 0..10V,LL , 2..10V,LL **For AI890/AI895:** 0..20mA , 4..20mA , 0..20mA,LL , 4..20mA,LL , **For AI820:** –20..20mA 0..20mA , 4..20mA , -10..10V , 0..10V , 2..10V , –20..20mA,LL , 0..20mA,LL , 4..20mA,LL , -10..10V,LL , 0..10V,LL , 2..10V,LL , –5..5V , 0..5V , 1..5V , –5..5V,LL , 0..5V,LL , 1..5V,LL	See the table “Signal Ranges”. The comma before “LL” in some of the values is part of the string value.
9	LIN_CODE	user	0	–	**LIN**earization **CODE** 0=no linearization 1= square root.	–
X1	SCANT	user	1s	–	**SCAN T**ime interval for input. See Introduction, section ”Allowed SCANT values”.	Modification is carried out at the next scan.
10	FILTER_P	user	0	–	**FILTER P**arameter: 0=no filtering 5ms, 10ms, 15ms, …95ms, 100ms, 150ms, 200ms, …950ms, 1000ms, 1500ms, 2000ms, …9500ms, 10s, 15s, 20s, …65s	Values in the ranges 0..9999ms and 1s..65s will be converted to the nearest available value specified in the Description column besides.
8	DEADB	user	0.2%	–	**DEADB**and: -1=update every time, 0%, 0.0035%, 0.01%, 0.025%, 0.05%, 0.1%, 0.2%, 0.45%, 0.9%, 1.8%, 3.6%	–
43	OVF_CTRL	user	1	B(r/w)	1=alternative **OV**er**F**low **C**on**TR**o**L** handling.	See Function ”9. Error handling”.
44	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
52	ERR_CTRL	user	0	B(r/w)	**ERR**or **C**on**TR**o**L**. 0=Value is frozen when error occurs. 1=Value is set to the value of ERR_VAL when error occurs.	–
59(3).109	ERR_VAL	user	0.0	R(r/w)	**ERR**or **VAL**ue. Value to be set when error occurs and ERR_CTRL=1.	–
19	VALUE	system	–	R(r/w)	Process **VALUE** in engineering unit.	–
36	OVERFLOW	system	–	B(r/w)	1=dynamic indication of **OVERFLOW**.	See Function ”9. Error handling”.
22	ERR	system	–	B(r/w)	1=Hardware or configuration **ERR**or or signal overflow.	–
23	UPDATED	system	–	B(r/w)	1=system indicates that VALUE has been **UPDATED**.	–

Signal Ranges

Conversion Parameter, S800 I/O

AI810

Voltage	0..10V	0..10V,LL	2..10V	2..10V,LL
Current	0..20mA	0..20mA,LL	4..20mA	4..20mA,LL

AI820

Voltage	–10..10V	0..10V	0..10V,LL	2..10V	2..10V,LL	–5..5V	0..5V	0..5V,LL	1..5V	1..5V,LL
Current	–20..20mA	0..20mA	0..20mA,LL	4..20mA	4..20mA,LL					

AI890/AI895

Current	0..20mA	0..20mA,LL	4..20mA	4..20mA,LL

About Lower Limit (,LL)

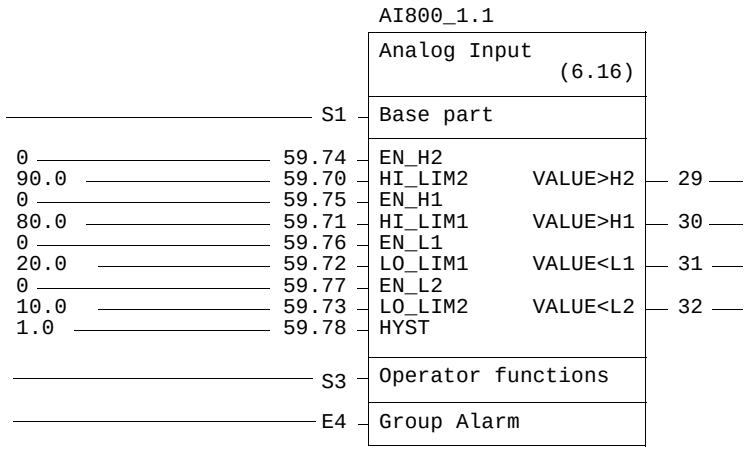
The raw signal (not signal conditioned) value is always limited to the lowest value given by the signal range. This means that if the raw signal value is below this limit it will be set to the low limit value, before performing the signal conditioning.

DEADB Values

Available variation limits are:

0%	0.01%	0.05%	0.2%	0.9%	3.6%
0.0035%	0.025%	0.1%	0.45%	1.8%	–1 (updated at each scan)

Limit check



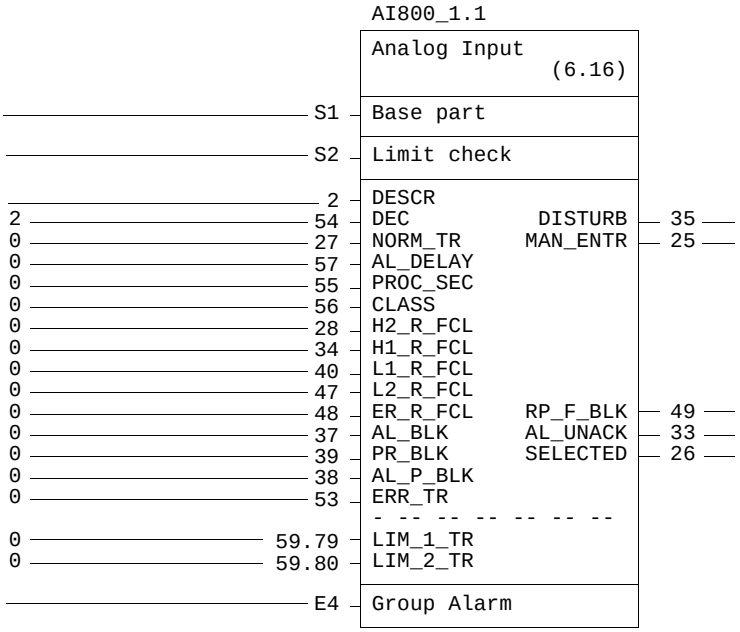
Terminal Description, Limit check

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
59.74	EN_H2	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **2**.	–
59.70	HI_LIM2	user	90.0	R(r/w)	**HI**gh **LIM**it no. **2** in engineering unit.	Accepted value HI_LIM2 > HI_LIM1.
59.75	EN_H1	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **1**.	–
59.71	HI_LIM1	user	80.0	R(r/w)	**HI**gh **LIM**it no. **1** in engineering unit.	Accepted value LO_LIM1 < HI_LIM1 < HI_LIM2.
59.76	EN_L1	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **1**.	–
59.72	LO_LIM1	user	20.0	R(r/w)	**LO**wer **LIM**it no. **1** in engineering unit.	Accepted value HI_LIM1 > LO_LIM1 > LO_LIM2.
59.77	EN_L2	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **2**.	–

Terminal Description, Limit check (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
59.73	LO_LIM2	user	10.0	R(r/w)	**LO**wer **LIM**it no. **2** in engineering unit.	Accepted value LO_LIM2 < LO_LIM1.
59.78	HYST	user	1.0	R(r/w)	**HYST**eresis for limit check in engineering units.	The hysteresis is located within each limit.
29	VALUE>H2	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **2**.	Cannot be affected by user.
30	VALUE>H1	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **1**.	Cannot be affected by user.
31	VALUE<L1	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **1**.	Cannot be affected by user.
32	VALUE<L2	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **2**.	Cannot be affected by user.

Operator functions



Terminal Description, Operator functions

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Max. 20 characters. You may enter any information regarding the signal.
54	DEC	user	2	–	The number of **DEC**imals to be presented by Operator Station.	0 - 6 decimals.
27	NORM_TR	user	0	B(r)	1=**NORM**al event driven updating on displays and lists in Operator Station.	0=no event driven up–dating in Operator Station.
57	AL_DELAY	user	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds: 1 - 127.	0 = no delay.
55	PROC_SEC	user	0	I(r/w)	**PROC**ess **SE**CtIon is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
56	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
28	H2_R_FCL	user	0	B(r)	**H**igh limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H2 limit alarms.	–
34	H1_R_FCL	user	0	B(r)	**H**igh limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H1 limit alarms.	–
40	L1_R_FCL	user	0	B(r)	**L**ow limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L1 limit alarms.	–
47	L2_R_FCL	user	0	B(r)	**L**ow limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L2 limit alarms.	–
48	ER_R_FCL	user	0	B(r)	**ER**ror **R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating error alarms.	–
37	AL_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
39	PR_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **PR**intout in Operator Station.	–
38	AL_P_BLK	PC	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K**. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC-program or Engineering Station.	–
53	ERR_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the **TR**eatment in Operator Station of signal **ERR**ors, and operator commands.	Recommended settings 0=No event reporting 2=Event reporting incl. alarm handling
59.79	LIM_1_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H1 and L**1 LIM**it **TR**ansgressions.	Recommended settings 0=No event reporting 3=Event reporting, no alarm handling 4=Event reporting, incl. alarm handling
59.80	LIM_2_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H2 and L**2 LIM**it **TR**ansgressions.	Recommended settings 0=No event reporting 3=Event reporting, no alarm handling 4=Event reporting, incl. alarm handling
35	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indication whether a state of alarm exists in the element.	Cannot be affected by user.
25	MAN_ENTR	system	–	B(r/w)	1=Flag indication that the signal VALUE has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	Cannot be affected by user.
49	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**lag **BL**oc**K**. Flag indicating that a repeating alarm is present in the element but that the indication has been blocked.	Cannot be affected by user.
33	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	Cannot be affected by user.
26	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	Cannot be affected by user.

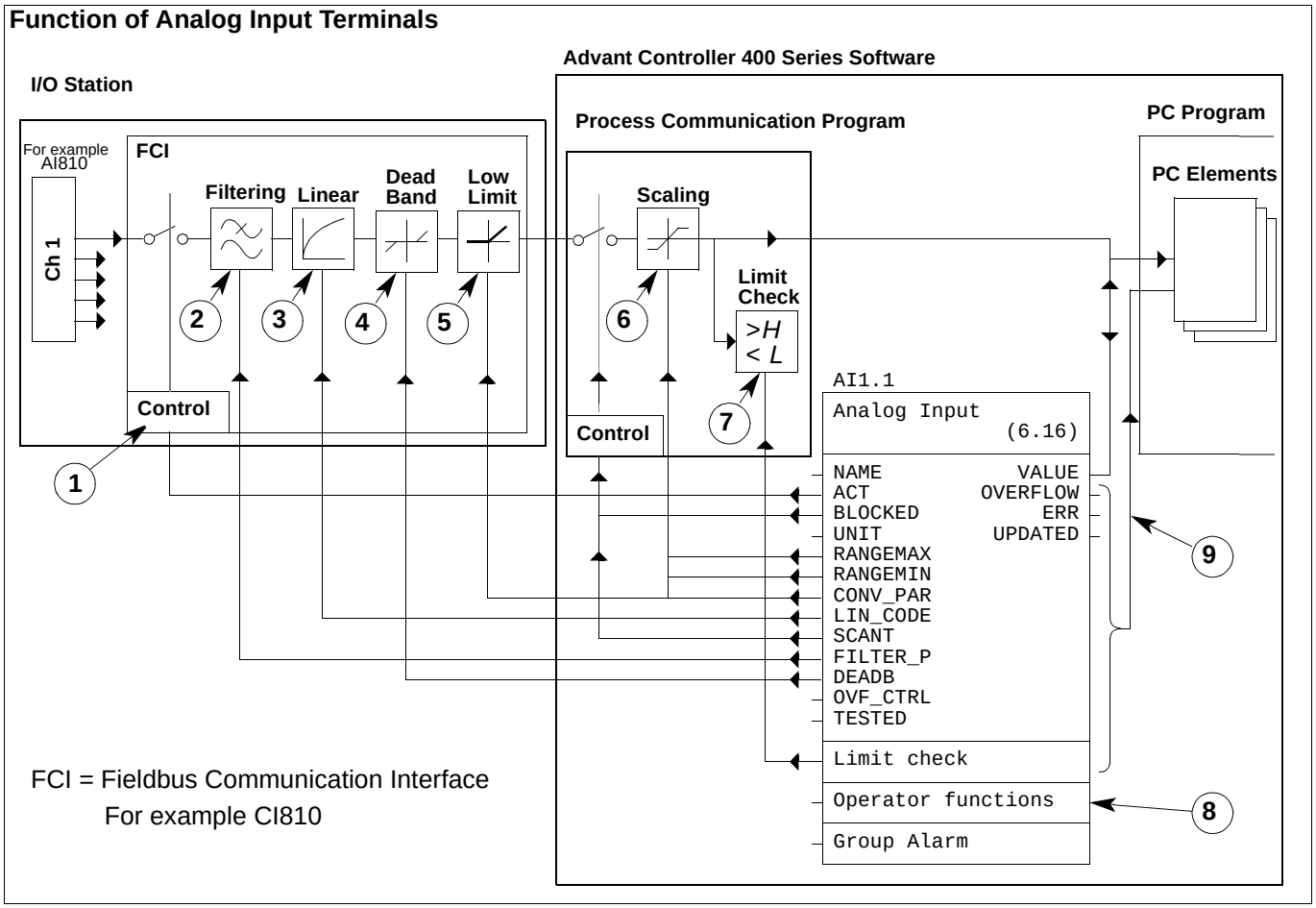
Function

The Analog Input data base element defines a standard analog input signal. With the data base element you control the signal processing executed by the process communication program. You can also define limit checking and the interface to the Advant Station 500 Series Operator Station system.

The signal processing includes:

1. Updating
2. Filtering
3. Linearization
4. Variation Control (deadband)
5. Low limit Control
6. Scaling
7. Limit Check
8. Operator Station functions
9. Error handling.

The figure below illustrates this process.



1. Updating

The analog signal is converted and read at intervals determined by the terminal SCANTime. You should set SCANT to the requirements of your system.

The mirroring of converted measurement data via Advant Fieldbus 100 to the control unit of the Advant Controller 400 Series does influence the “freshness” of the data read and converted by the system. The Advant Fieldbus 100 scan time (INSCANT) is set on the AI module element and the cycle time is common for all channels on the AI module.

If you set BLOCKED, the data acquisition stops, allowing manual entry of VALUE.

To disable the data acquisition completely, you set ACTivated to 0. This excludes the input from processing.The signals in a module are converted in sequence and the number of activated channels (ACT=1) thus determine how often each conversion is repeated (cyclicity). This means that one should only activate the channels that are actually used to ensure the best possible cyclicity.

2. Filtering

You may select software filtering of the process value in addition to the hardware board filter.

The FILTER_Parameter time constant can be set between 0 and 65000ms. The filter corresponds to a one-pole low-pass filter.

FILTER_P=0 disables the software filter.

3. Linearization

For special transducers with quadratic characteristics, for example flow measurement, you may select linearization using root extraction. This function is obtained with LIN_CODE=1.

Other types of linearization is obtained by PC programming (for example using arithmetic elements or function generator elements).

4. Variation control

With DEADBand you select the accuracy of the updating. If the input value has not changed more than the DEADBand, since the previous update, no updating or further processing will take place. This function is valuable in reducing signal noise and unnecessary data processing.

DEADBand is set in percentages of the signal range.

DEADBand=0 means updating at each change of input reading (that is using the full resolution of the A/D converter, but no unnecessary updates).

DEADBand= –1 forces update at each reading. (Can be used temporarily to get a new value after change of RANGEMAX and so on.)

5. Low limit control

This function provides for limiting the measured value to the lower limit of the signal range specified. Which means that under range values will be set to the lower limit of the specified signal range.

6. Scaling

All values are used in the system as engineering units. You enter scaling in two steps.

1. Nominal input range

With CONV_PAR you select the measuring range, using the nominal limits for the physical signal expressed in volts or mA.

See the section ”Signal ranges”. The CONV_PAR entered for the AI module will appear as default in the signal, to avoid unnecessary typing. See the manuals *S800 I/O User’s Guide*, for information about the I/O module.

With RANGEMAX and RANGEMIN you determine the meaning of the signal in the engineering unit. The values to be entered are those corresponding to the signal limit values in the CONV_PAR. The engineering unit can be entered in UNIT, for documentation and display purposes.

2. Range example

If the input of 0 volt represent 0 m/s and 10 volts the speed of 100 m/s, set:

CONV_PAR=0..10 V or 0..10V,LL

UNIT= m/s

RANGEMIN=0

RANGEMAX=100

VALUE will normally have the range 0-100 (that is ≤0..115% (with 0..10V) or 0..115% (with 0..10V,LL) before out-of-range error occurs).

7. Limit check

In the Limit check part of the data base element you determine whether and how a limit check will be performed. The result is stored in the output terminals and is thus available to PC and other programs. If the NORM_TReat terminal is set to 1 each change in limit check status is also sent to the Advant Station 500 Series Operator Station.

The main use of this function is for Advant Station 500 Series Operator Station presentation, but it is also a convenient alternative to limit checking with PC element COMP-R.

8. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation and Functional unit documentation.

9. Error handling

The control function of an AI signal indicates errors via ERR and OVERFLOW. Four types of errors can occur, two that are caused by the system and two that are caused by the operator.

1. ERR in the AI module element is set

This occurs if the module function is determined non-functional. Typical causes of this type of error are: missing or faulty hardware, wrong module type, incorrectly installed hardware, fieldbus communication error, or errors in data base or software.

ERR in the AI module are copied to the error handling function of all channels and the error flag ERR is set to 1 for all channels. VALUE will be set according to ERR_CTRL and ERR_VAL.

The red F (Fault) LED on the module front usually shows a steady light if the module is faulty.

ERR is reset, if hardware error, within 5-10 seconds of replacement of the non-functional hardware unit.

2. Out of range values

”Overflow” or ”underflow” will occur if the A/D converter is given values out of its range. Different ways of handling this can be obtained through the use of the OVF_CTRL parameter. The parameter does not affect the handling of the electrical signal's passage through zero.

See the table for Indication at Out-of-Range AI-signal for details of the relationships between the level of the electrical input signal, status indications and indication/limits of VALUE.

Detection of out-of-range signals can give indirect information about various errors, for example disconnected transducers, cut electrical connections, loss of power supply or other hardware and system errors on signal level.

OVERFLOW are reset when the signal is in range again.

3. ERR is set when the SERVICE terminal in the AI module element has been set to 0 by the operator

The red F (Fault) LED on the module does not show any light. ERR is reset when SERVICE has been set to 1 again.

4. The module was not implemented at the latest system initiation

The red F (Fault) LED on the module front shows steady light if this type of error occurs.

ERR is reset by setting IMPL in the AI module.

The ERR and OVERFLOW terminals of the Analog Input element and the ERR terminal of the AI module elements can be connected to PC programs where the desired function may be built.

Indication at out-of-range AI signal

Electrical signal	**Parameter**	**Status indications**				**Value indication/limit**
	Signal	Module		Signal		
(% of max. input)	OVF_CTRL	WARNING	ERR	OVERFLOW	ERR	VALUE (% of RANGEMAX - RANGEMIN)
> 115%	0 1	1 0	0 0	1 1	1 0	(1) 15% over RANGEMAX
< -115%	0 1	1 0	0 0	1 1	1 0	(1) 15% below RANGEMIN
< 10% (“floating zero”)	0 1	1 1	0 0	0 0	1 1	12.5% below RANGEMIN (2) 12.5% below RANGEMIN (2)
< 0%	0 1	0 0	0 0	0 0	0 0	RANGEMIN(3) RANGEMIN(3)

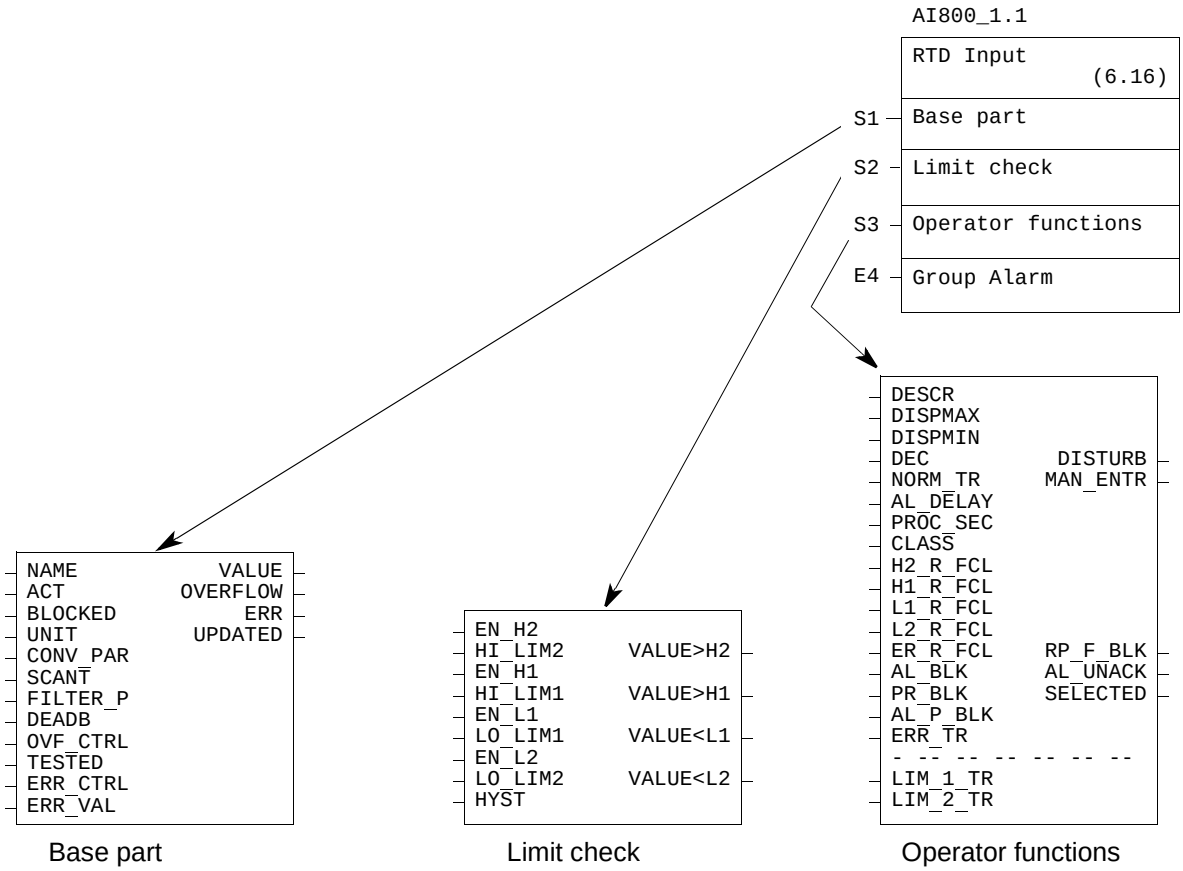
(1) Frozen at the value of the preceding sample, provided that OVERFLOW = 1 or set to the value of ERR_VAL if ERR_CTRL=1.
(2) Note: % of RANGEMAX - RANGEMIN, with single ranges with -LL give RANGEMIN.
(3) With single ranges -LL give RANGEMIN, single ranges without -LL. can give same percent below RANGEMIN.

RTD Input AIS830

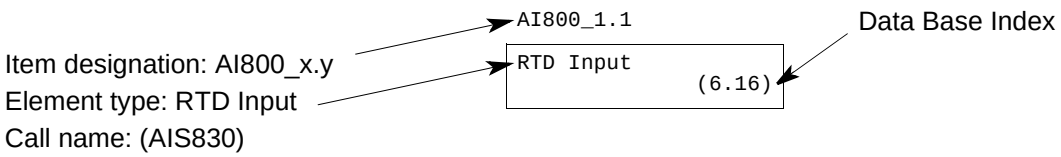
Summary

The RTD Input signal data base element is subordinate to the RTD module data base element specifying an AI830 hardware module.

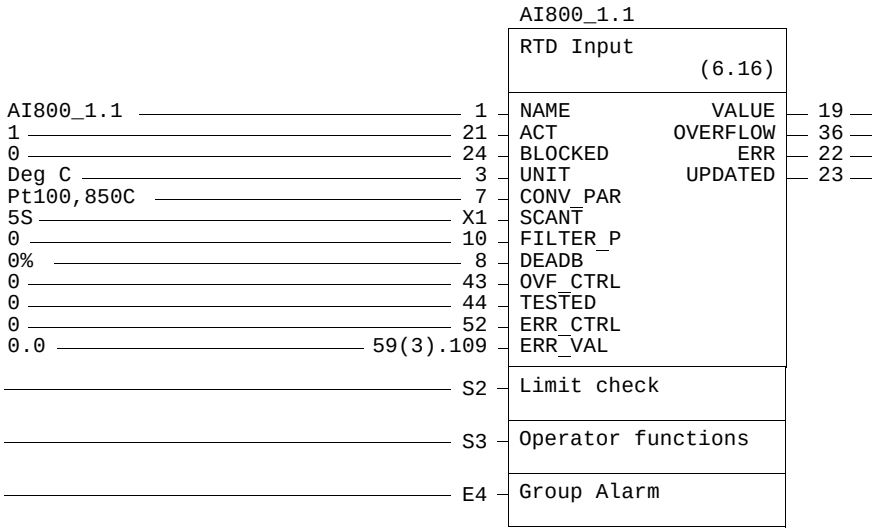
Overview



Head



Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AI800_x.y	–	Each RTD Input signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed. See the table regarding DB-item Designation vs. Hardware Channel.
21	ACT	user	1	B(r)	1=the signal is **ACT**ive (scanned by the data acquisition program).	–
24	BLOCKED	dialog	0	B(r/w)	1=updating of signal VALUE is **BLOCKED**.	–
3	UNIT	user	Deg C	–	The measured value **UNIT** in engineering units.	Max. 6 characters shown in Operator Station and data base element.
7	CONV_PAR	user	Pt100, 850C	–	**CONV**ersion **PAR**ameter.	See the table “Conversion Parameters” for a more detailed description of available values.
X1	SCANT	user	5s	–	**SCAN T**ime interval for input. See Introduction, section ”Allowed SCANT values”.	–

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
10	FILTER_P	user	0	–	**FILTER P**arameter: 0=no filtering 50ms, 100ms, …950ms 1000ms, 1500ms, …9500ms 10s, 15s, …95s 100s, 150s, …650s	Values in the ranges 0..9999ms and 1s..650s will be converted to the nearest available value specified in the Description column besides.
8	DEADB	user	0%	–	**DEADB**and: -1=update every time 0%, 0.003%, 0.009%, 0.02%, 0.05%, 0.1%, 0.2%, 0.4%, 0.8%, 1.6%, 3.2%	–
43	OVF_CTRL	user	1	B(r/w)	**OV**er**F**low **C**on**TR**o**L**. 1=alternative overflow handling.	See Function “7. Error handling”.
44	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
52	ERR_CTRL	user	0	B(r/w)	**ERR**or **C**on**TR**o**L**. 0=Value is frozen when error occurs. 1=Value is set to the value of ERR_VAL when error occurs.	–
59(3).109	ERR_VAL	user	0.0	R(r/w)	**ERR**or **VAL**ue. Value to be set when error occurs and ERR_CTRL=1.	–
19	VALUE	system	–	R(r/w)	Process **VALUE** in engineering unit, Celsius or Fahrenheit.	–
36	OVERFLOW	system	–	B(r/w)	1=dynamic indication of **OVERFLOW**.	See Function “7. Error handling”.
22	ERR	system	–	B(r/w)	1=Hardware or configuration **ERR**or or signal overflow.	–
23	UPDATED	system	–	B(r/w)	1=system indicates that VALUE has been **UPDATED**.	Cannot be affected by user.

Signal Ranges

Conversion Parameter

Value (1)	Sensor type	Temperature Range
Pt100,80C	Pt100	–80..+80 °C
Pt100,176F	Pt100	–112..+176 °F
Pt100,250C	Pt100	–200..+250 °C
Pt100,482F	Pt100	–328..+482 °F
Pt100 850C	Pt100	–200..+850 °C
Pt100,1562F	Pt100	–328..+1562 °F
Ni100,180C	Ni100	–60..+180 °C
Ni100,356F	Ni100	–76..+356 °F
Ni120,260C	Ni120	–80..+260 °C
Ni120,500F	Ni120	–112..+500 °F
Cu10,260C	Cu10	–100..+260 °C
Cu10,500F	Cu10	–148..+500 °F
Resistor,400	Resistor	0..400Ω

(1) All values include a comma

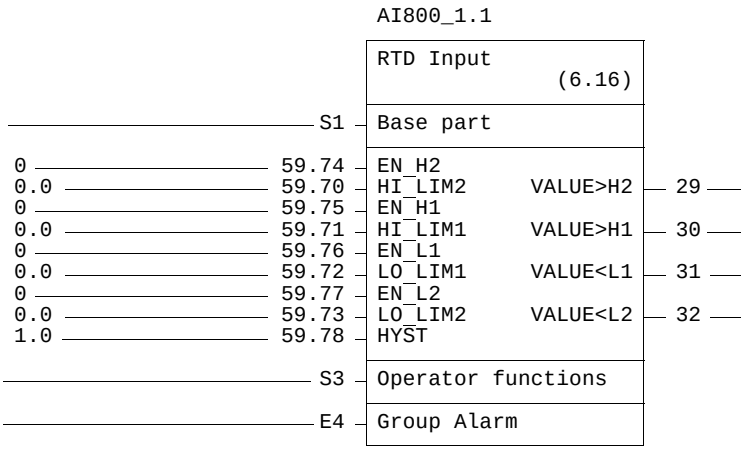
DEADB Values

Available variation limits are:

0%	0.009%	0.05%	0.2%	0.8%	3.2%
0.003%	0.02%	0.1%	0.4%	1.6%	–1 (updated at each scan)

The DEADB is set in percentage of the nominal positive max value of the current measuring range.

Limit check



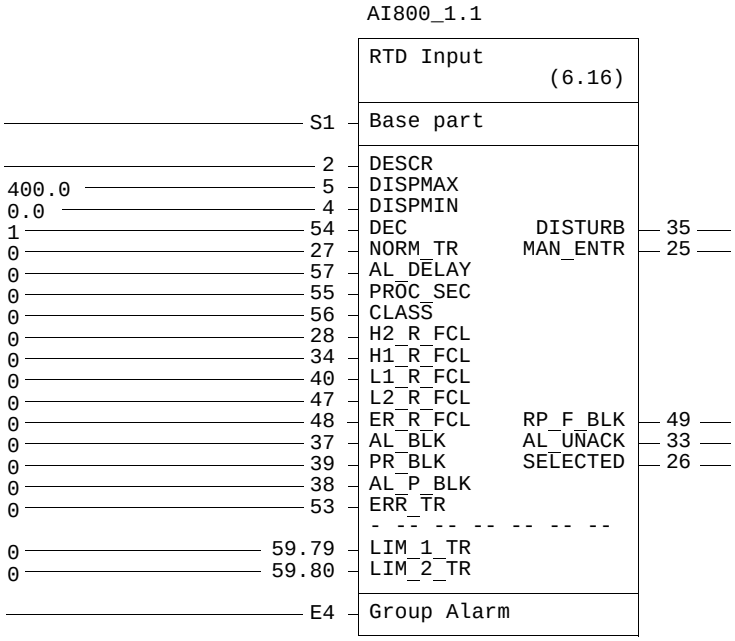
Terminal Description, Limit check

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
59.74	EN_H2	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **2**.	–
59.70	HI_LIM2	user	0.0	R(r/w)	**HI**gh **LIM**it no. **2** in engineering unit.	Accepted value HI_LIM2 > HI_LIM1.
59.75	EN_H1	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **1**.	–
59.71	HI_LIM1	user	0.0	R(r/w)	**HI**gh **LIM**it no. **1** in engineering unit.	Accepted value LO_LIM1 < HI_LIM1 < HI_LIM2.
59.76	EN_L1	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **1**.	–
59.72	LO_LIM1	user	0.0	R(r/w)	**LO**wer **LIM**it no. **1** in engineering unit.	Accepted value HI_LIM1 > LO_LIM1 > LO_LIM2.
59.77	EN_L2	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **2**.	–
59.73	LO_LIM2	user	0.0	R(r/w)	**LO**wer **LIM**it no. **2** in engineering unit.	Accepted value LO_LIM2 < LO_LIM1.
59.78	HYST	user	1.0	R(r/w)	**HYST**eresis for limit check in engineering units.	The hysteresis is located within each limit.
29	VALUE>H2	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **2**.	Cannot be affected by user.

Terminal Description, Limit check (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
30	VALUE>H1	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **1**.	Cannot be affected by user.
31	VALUE<L1	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **1**.	Cannot be affected by user.
32	VALUE<L2	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **2**.	Cannot be affected by user.

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Max. 20 characters.

Terminal Description, Operator functions (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
5	DISPMAX	user	400.0	R(r/w)	**MAX**imum value **DISP**layed.	Derives scaling for graphic presentation.
4	DISPMIN	user	0.0	R(r/w)	**MIN**imum value **DISP**layed.	Derives scaling for graphic presentation.
54	DEC	user	1	–	The number of **DEC**imals to be presented by Operator Station.	0 - 6 decimals.
27	NORM_TR	user	0	B(r)	1=**NORM**al event driven updating on displays and lists in Operator Station.	0=no event driven updating in Operator Station.
57	AL_DELAY	user, PC	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds: 1 - 127.	0 = no delay.
55	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
56	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
28	H2_R_FCL	user	0	B(r)	**H**igh limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H2 limit alarms.	–
34	H1_R_FCL	user	0	B(r)	**H**igh limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H1 limit alarms.	–
40	L1_R_FCL	user	0	B(r)	**L**ow limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L1 limit alarms.	–
47	L2_R_FCL	user	0	B(r)	**L**ow limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L2 limit alarms.	–
48	ER_R_FCL	user	0	B(r)	**ER**ror **R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating error alarms.	–
37	AL_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
39	PR_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **PR**intout in Operator Station.	–
38	AL_P_BLK	PC	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K**. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC-program.	–
53	ERR_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the **TR**eatment in Operator Station of signal **ERR**ors, and operator commands.	Recommended settings 0=No event reporting 2=Event reporting including alarm handling
59.79	LIM_1_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H1 and L**1 LIM**it **TR**ansgressions.	Recommended settings 0=No event reporting 3=Event reporting, no alarm handling 4=Event reporting, incl. alarm handling
59.80	LIM_2_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H2 and L**2 LIM**it **TR**ansgressions.	Recommended settings 0=No event reporting 3=Event reporting, no alarm handling 4=Event reporting, incl. alarm handling
35	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indication whether a state of alarm exists in the element.	Cannot be affected by user.
25	MAN_ENTR	system	–	B(r/w)	1=Flag indication that the signal VALUE has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	–
49	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**lag **BL**oc**K**. Flag indicating that a repeating alarm is present, but that it has been blocked in the element.	–
33	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	–
26	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–

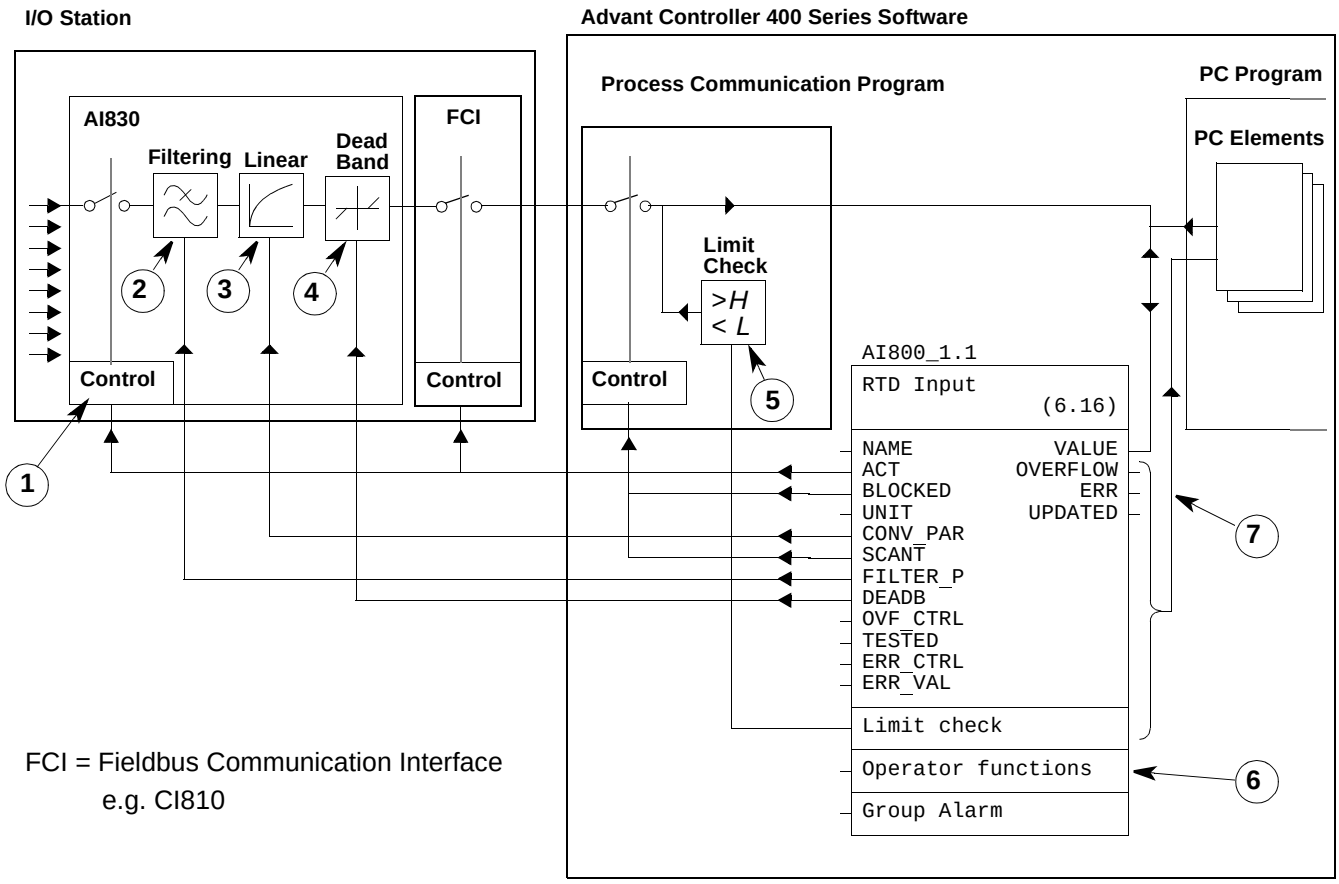
Function

The RTD Input data base element is an analog input for resistive temperature transducers of Pt100, Cu10, Ni100 or Ni120 type. With the element you control the signal processing executed by the process communication program. You can also define limit checking and the interface to the Advant Station 500 Series Operator Station system.

The system processing includes:

1. Updating
2. Filtering
3. Linearization
4. Variation Control (deadband)
5. Limit check
6. Operator Station functions
7. Error handling.

Function of RTD Input Terminals



1. Updating

The RTD signal is converted and read at intervals determined by the terminal SCANTime. You should set SCANT to the requirements of your system.

The mirroring of converted measurement data via Advant Fieldbus 100 to the control unit of the Advant Controller 400 Series does influence the “freshness” of the data read and converted by the system. The Advant Fieldbus 100 scan time (INSCANT) is set on the AI module element and the cycle time is common for all channels on the AI module.

For a description of channel update times see *S800 I/O User’s Guide.*

If you set BLOCKED, the data acquisition stops, allowing manual entry of VALUE.

To disable the data acquisition completely, you set ACTivated to 0. This excludes the input from processing. The signals in a module are converted in sequence and the number of activated channels (ACT=1) thus determine how often each conversion is repeated (cyclicity). This means that one should only activate the channels that are actually used to ensure the best possible cyclicity.

2. Filtering

You may select software filtering of the process value in addition to the hardware filter. The FILTER_Parameter time constant can be set between 0 and 650s. This is the time when 63% of a step change has been transferred to VALUE. The filter corresponds to a one-pole low-pass filter.
FILTER_P=0 disables the software filter.

3. Linearization

Linearization according to current standard and conversion to a temperature measurement value (Celsius or Fahrenheit).
The CONV_PAR terminal selects representation in degrees Celsius (Centigrade) or Fahrenheit. Note that UNIT should be changed separately. VALUE (and limits, DISPMAX and DISPMIN) are then expressed in this unit.

Refer to the table for Conversion parameters for available signal ranges.

Two values must be entered in CONV_PAR, separated by a comma: Sensor type and the Signal range.

4. Variation Control

With DEADBand you select the accuracy of the updating. If the input value has not changed more than the DEADBand, since the previous update, no updating or further processing will take place. This function is valuable in reducing signal noise and unnecessary data processing.

DEADBand is set in percentages of the positive part of the signal range.

DEADB=0 means updating at each change of input reading (i.e. using the full resolution of the A/D converter, but no unnecessary updates).

DEADB= –1 forces update at each reading.

5. Limit check

In the limit check part of the data base element you determine whether and how a limit check will be performed. The result is stored in the output terminals and is thus available to PC and other programs. If the NORM_TReat terminal is set to 1, each change in limit check status is also sent to the Advant Station 500 Series Operator Station.

The main use of this function is for Advant Station 500 Series Operator Station presentation, but it is also a convenient alternative to limit checking with PC element COMP-R.

6. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation and functional unit documentation.

7. Error handling

The control function of a RTD input indicates errors via the ERR and OVERFLOW terminals. Four different types of errors can occur, two caused by the system, and two caused by the operator.

1. ERR is set in the RTD module element

   This occurs if the module function is defined non-functional by the supervision function. This can be caused by missing, wrong module type, malfunctioning or incorrectly strapped hardware, errors in software or data base.

   ERR in a RTD module is copied to the error handling functions of all channels and the error flag ERR is set.

   VALUE will be set according to ERR_CTRL and ERR_VAL if this occurs. The F (Fault) LED on the module shows steady light. ERR is reset, if hardware error, within 5 seconds of replacement of the non-functional board.

2. Out-of-range error

   Behavior of OVERFLOW, ERR and VALUE, if the temperature value goes outside the present measurement range, see the table on the following page.

   Detection of out-of-range signals can give indirect information that a transducer has been disconnected, cut electrical connections, other hardware errors or system errors on signal level.

   ERR and OVERFLOW are reset when the error is corrected.

3. ERR is set when the SERVICE terminal has been set to 0 by the operator

   The red F (Fault) LED on the module does not show any light.

   ERR is reset when SERVICE is set to 1 again.

4. The module was not implemented during the latest system init

   The red F (Fault) LED on the module front shows steady light.

   ERR is reset by setting IMPL in RTD module element.

The ERR and OVERFLOW terminals of the RTD Input element and the ERR terminal of the RTD module element can be connected to a PC program where the desired function may be built.

Behavior of OVERFLOW, ERR and VALUE, if the temperature value goes outside the present measurement range

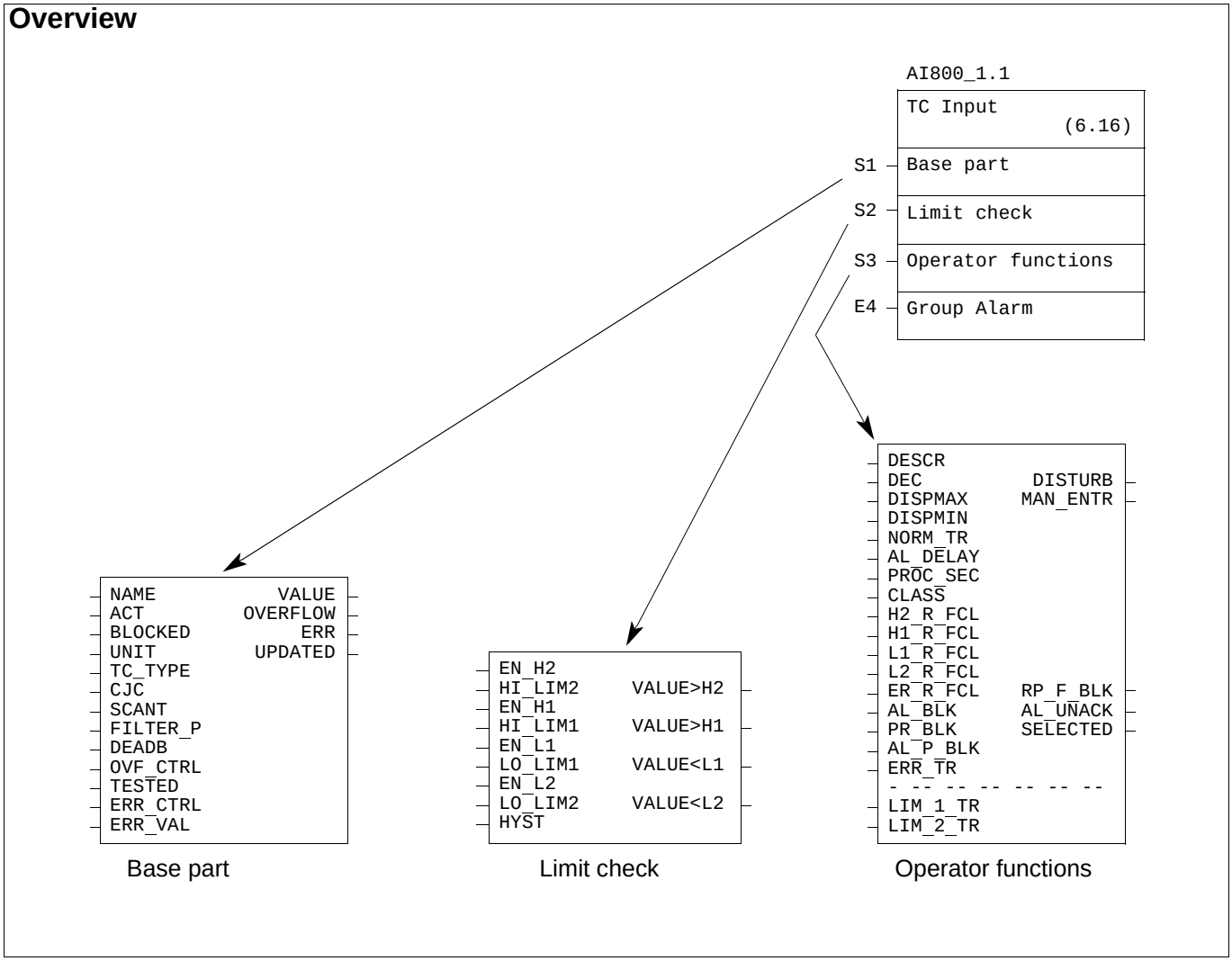
Electrical signal	**Parameter**	**Status indications**		
	Signal	Module		Signal
(% of max. input)	OVF_CTRL	WARNING	ERR	OVERFLOW
> 2.4% over max input range	0 1	1 0	0 0	1 1
> 2.4% under min input range	0 1	0 0	0 0	0 0

TC Input AIS835

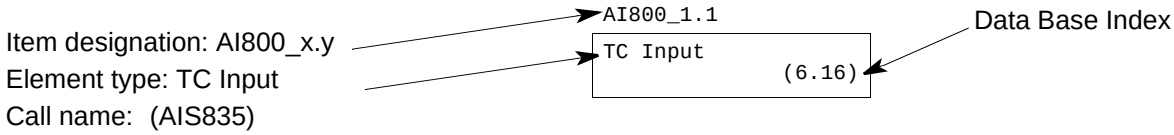
Summary

The TC Input signal data base element is subordinate to the TC module data base element specifying an AI835 hardware module.

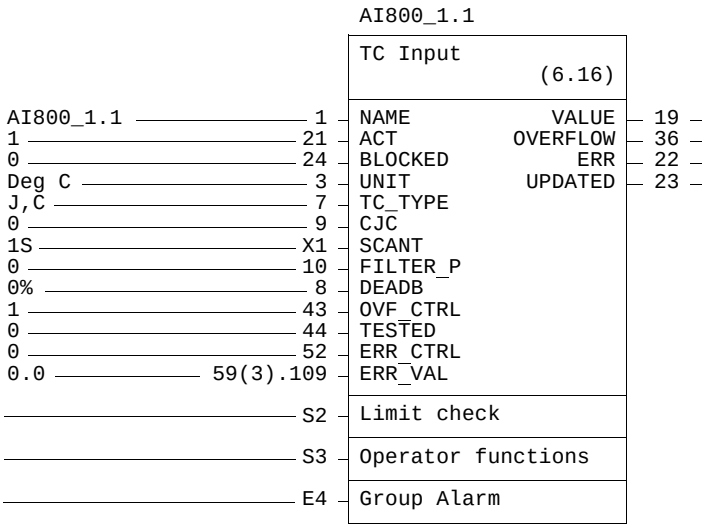
Overview



Head



Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AI800_x.y	–	Each TC Input signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
21	ACT	user	1	B(r)	1=the signal is **ACT**ive (scanned by the data acquisition program).	–
24	BLOCKED	dialog	0	B(r/w)	1=updating of signal VALUE is **BLOCKED**.	–
3	UNIT	user	Deg C	–	The signal **UNIT** in engineering unit. Empty string is entered as a dot (.).	Max. 6 characters shown in Operator Station and data base element.

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
7	TC_TYPE	user	J,C	-	**T**hermo**C**ouple **TYPE**. B,C or B,F C,C or C,F E,C or E,F J,C or J,F K,C or K,F N,C or N,F R,C or R,F S,C or S,F T,C or T,F Pt100,C or Pt100,F Linear	See the table “Available Thermocouple types” for a description of the TC types and temperature ranges.
9	CJC	user	0	–	**C**old **J**unction **C**ompensation: 0=Cold Junction Compensation 1=Fixed Junction Compensation	–
X1	SCANT	user	1s	–	**SCAN T**ime interval for input. See Introduction, section ”Allowed SCANT values”.	Modification is carried out at the next scan.
10	FILTER_P	user	0	–	**FILTER P**arameter: 0=no filtering 50ms, 100ms, …950ms 1000ms, 1500ms, …9500ms 10s, 15s, …95s 100s, 150s, …650s	Values in the ranges 0..9999ms and 1s..650s will be converted to the nearest available value specified in the Description column besides.
8	DEADB	user	0%	–	**DEADB**and: -1=update every time, 0%, 0.003%, 0.009%, 0.02%, 0.05%, 0.1%, 0.2%, 0.4%, 0.8%, 1.6%, 3.2%	–
43	OVF_CTRL	user	1	B(r/w)	1=alternative **OV**er**F**low **C**on**TR**o**L** handling.	See Function ”7. Error handling”.
44	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
52	ERR_CTRL	user	0	B(r/w)	**ERR**or **C**on**TR**o**L**. 0=Value is frozen when error occurs. 1=Value is set to the value of ERR_VAL when error occurs.	–
59(3).109	ERR_VAL	user	0.0	R(r/w)	**ERR**or **VAL**ue. Value to be set when error occurs and ERR_CTRL=1.	–
19	VALUE	system	–	R(r/w)	Process **VALUE** in engineering unit.	–
22	ERR	system	–	B(r/w)	1=Hardware or configuration **ERR**or or signal overflow.	–

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
36	OVERFLOW	system	–	B(r/w)	1=dynamic indication of **OVERFLOW**.	See Function ”7. Error handling”.
23	UPDATED	system	–	B(r/w)	1=system indicates that VALUE has been **UPDATED**.	–

Available Thermocouple Types

Value	Thermocouple Type	Temperature Range	References
B,C B,F	Platinum - 30% Rhodium/Platinum-6% Rhodium, Pt-30Rh/Pt-6Rh	0 °C to 1820 °C 32 °F to 3308 °F	IEC 584-1 1995
C,C C,F	Tungsten - 5% Rhenium/Tungsten-26% Rhenium, W-5Re/W-26Re	0 °C to 2300 °C 32 °F to 4172 °F	Hoskins Mfg. Co type C. This type is not approved by IEC
E,C E,F	Nickel - 10% Chromium / Copper -Nickel, Ni - 10% Cr / Cu - /Ni	–270 °C to 1000 °C –454 °F to 1832 °F	IEC 584-1 1995
J,C J,F	Iron/Copper - Nickel Fe/Cu-Ni	–210 °C to 1200 °C –346 °F to 2192 °F	IEC 584-1 1995
K,C K,F	Nickel - Chromium/Nickel-Aluminum, Ni-Cr/Ni-Al	–270 °C to 1372 °C –454 °F to 2502 °F	IEC 584-1 1995
N,C N,F	Platinum - 13% Rhodium/Platinum Pt-13Rh/Pt	–270 °C to 1300 °C –454 °F to 2372 °F	IEC 584-1 1995
R,C R,F	Platinum - 13% Rhodium/Platinum Pt-13Rh/Pt	–50 °C to 1768 °C –58 °F to 3214 °F	IEC 584-1 1995
S,C S,F	Platinum - 10% Rhodium/Platinum Pt-10Rh/Pt	–50 °C to 1768 °C –58 °F to 3214 °F	IEC 584-1 1995
T,C T,F	Copper/Copper - Nickel Cu/Cu-Ni	–270 °C to 400 °C –454 °F to 752 °F	IEC 584-1 1995
Pt100,C Pt100,F	Pt100 for measure off cold junction	–40 °C to 100 °C –40 °F to 212 °F	IEC 751
Linear	–	–25mV to 75mV	–

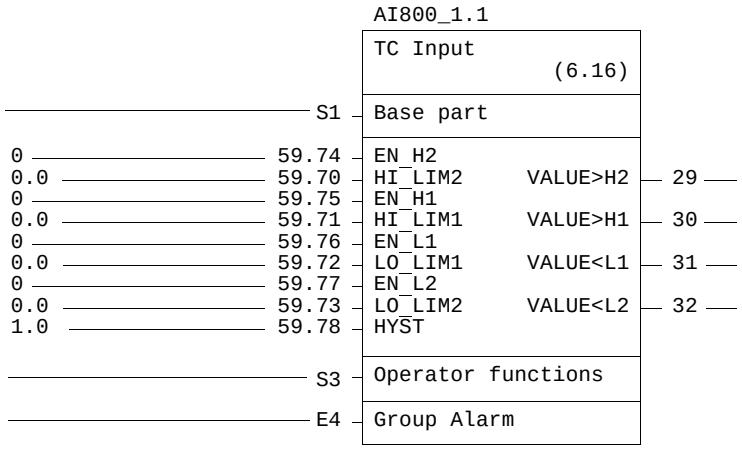
DEADB Values

Available variation limits are:

0%	0.009%	0.05%	0.2%	0.8%	3.2%
0.003%	0.02%	0.1%	0.4%	1.6%	–1 (updated at each scan)

The DEADB is set in percentage of the nominal positive max value of the current measuring range.

Limit check



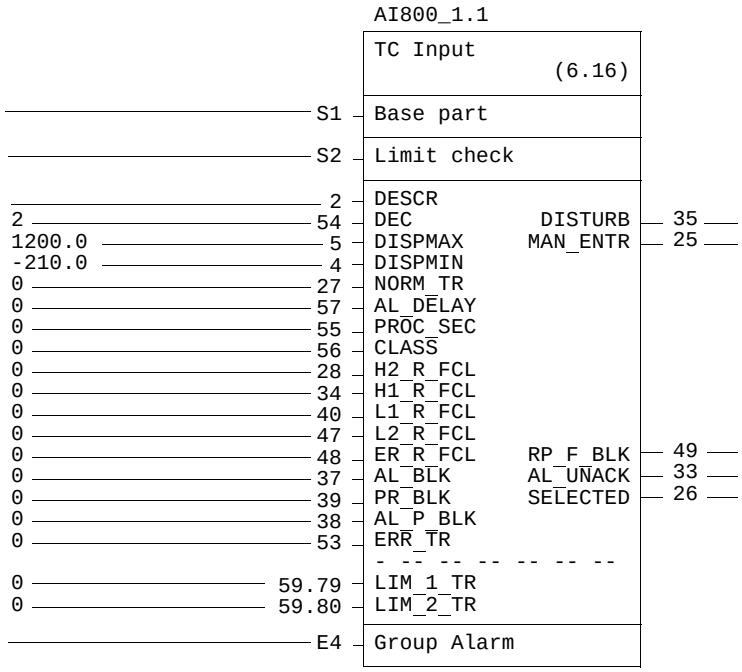
Terminal Description, Limit check

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
59.74	EN_H2	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **2**.	–
59.70	HI_LIM2	user	0.0	R(r/w)	**HI**gh **LIM**it no. **2** in engineering unit.	Accepted value HI_LIM2 > HI_LIM1.
59.75	EN_H1	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **1**.	–
59.71	HI_LIM1	user	0.0	R(r/w)	**HI**gh **LIM**it no. **1** in engineering unit.	Accepted value LO_LIM1 < HI_LIM1 < HI_LIM2.
59.76	EN_L1	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **1**.	–
59.72	LO_LIM1	user	0.0	R(r/w)	**LO**wer **LIM**it no. **1** in engineering unit.	Accepted value HI_LIM1 > LO_LIM1 > LO_LIM2.
59.77	EN_L2	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **2**.	–
59.73	LO_LIM2	user	0.0	R(r/w)	**LO**wer **LIM**it no. **2** in engineering unit.	Accepted value LO_LIM2 < LO_LIM1.
59.78	HYST	user	1.0	R(r/w)	**HYST**eresis for limit check in engineering units.	The hysteresis is located within each limit.
29	VALUE>H2	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **2**.	Cannot be affected by user.

Terminal Description, Limit check (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
30	VALUE>H1	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **1**.	Cannot be affected by user.
31	VALUE<L1	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **1**.	Cannot be affected by user.
32	VALUE<L2	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **2**.	Cannot be affected by user.

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Max. 20 characters. You may enter any information regarding the signal.

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
54	DEC	user	2	–	The number of **DEC**imals to be presented by Operator Station.	0 - 6 decimals.
5	DISPMAX	user	1200.0	R(r/w)	**MAX**imum value **DISP**layed on screen.	Derives scaling for screen.
4	DISPMIN	user	–210.0	R(r/w)	**MIN**imum value **DISP**layed on screen.	Derives scaling for screen.
27	NORM_TR	user	0	B(r)	1=**NORM**al event driven updating on displays and lists in Operator Station.	0=no event driven up–dating in Operator Station.
57	AL_DELAY	user	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds: 1 - 127.	0 = no delay.
55	PROC_SEC	user	0	I(r/w)	**PROC**ess **SE**Ction is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
56	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
28	H2_R_FCL	user	0	B(r)	**H**igh limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H2 limit alarms.	–
34	H1_R_FCL	user	0	B(r)	**H**igh limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H1 limit alarms.	–
40	L1_R_FCL	user	0	B(r)	**L**ow limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L1 limit alarms.	–
47	L2_R_FCL	user	0	B(r)	**L**ow limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L2 limit alarms.	–
48	ER_R_FCL	user	0	B(r)	**ER**ror **R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating error alarms.	–
37	AL_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
39	PR_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **PR**intout in Operator Station.	–
38	AL_P_BLK	PC	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K**. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC-program or Engineering Station.	–
53	ERR_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the **TR**eatment in Operator Station of signal **ERR**ors, and operator commands.	Recommended settings 0=No event reporting 2=Event reporting incl. alarm handling
59.79	LIM_1_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H1 and L**1 LIM**it **TR**ansgressions.	Recommended settings 0=No event reporting 3=Event reporting, no alarm handling 4=Event reporting, incl. alarm handling
59.80	LIM_2_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H2 and L**2 LIM**it **TR**ansgressions.	Recommended settings 0=No event reporting 3=Event reporting, no alarm handling 4=Event reporting, incl. alarm handling
35	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indication whether a state of alarm exists in the element.	Cannot be affected by user.
25	MAN_ENTR	system	–	B(r/w)	1=Flag indication that the signal VALUE has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	Cannot be affected by user.
49	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**lag **BL**oc**K**. Flag indicating that a repeating alarm is present in the element but that the indication has been blocked.	Cannot be affected by user.
33	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	Cannot be affected by user.
26	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	Cannot be affected by user.

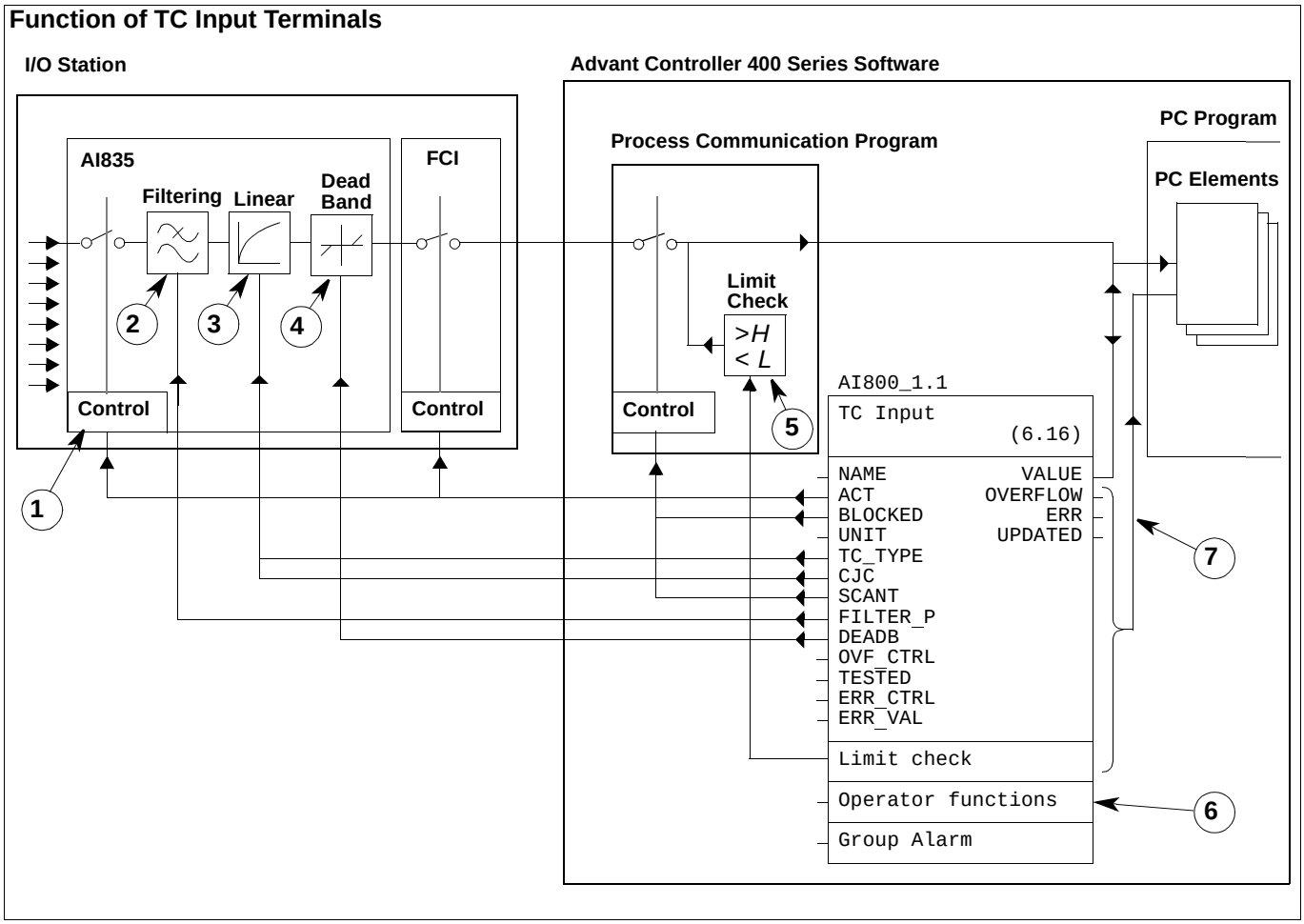
Function

The Thermocouple data base element is used for analog input signals from thermocouples. The signal handling carried out by the process communication program is controlled by the Thermocouple element. Limit check and connection to Advant Station 500 Series Operator Station may also be defined in the Thermocouple element.

The signal processing controlled by the element includes:

1. Updating
2. Filtering
3. Linearization
4. Variation Control (deadband)
5. Limit Check
6. Operator Station functions
7. Error handling.

The figure below illustrates this process.



1. Updating

The TC signal is converted and read at intervals determined by the terminal SCANTime. You should set SCANT to the requirements of your system.

The mirroring of converted measurement data via Advant Fieldbus 100 to the control unit of the Advant Controller 400 Series does influence the “freshness” of the data read and converted by the system. The Advant Fieldbus 100 scan time (INSCANT) is set on the AI module element and the cycle time is common for all channels on the AI module.

For a description of channel update times see *S800 I/O User’s Guide.*

If you set BLOCKED, the data acquisition stops, allowing manual entry of VALUE.

To disable the data acquisition completely, you set ACTivated to 0. This excludes the input from processing.The signals in a module are converted in sequence and the number of activated channels (ACT=1) thus determine how often each conversion is repeated (cyclicity). This means that one should only activate the channels that are actually used to ensure the best possible cyclicity.

2. Filtering

You may select software filtering of the process value in addition to the hardware filter. The FILTER_Parameter time constant can be set between 0 and 650s. This is the time when 63% of a step change has been transferred to VALUE. The filter corresponds to a one-pole low-pass filter.
FILTER_P=0 disables the software filter.

3. Linearization

Linearization according to current standard and conversion to a temperature measurement value (Celsius or Fahrenheit).
The TC_TYPE terminal selects representation in degrees Celsius (Centigrade) or Fahrenheit. Note that UNIT should be changed separately. VALUE (and limits, DISPMAX and DISPMIN) are then expressed in this unit.

4. Variation control

With DEADBand terminal you select the accuracy of the up-dating. If the input value has not changed more than the DEADBand, since the previous update, no updating or further processing will take place. This function is valuable to reduce signal noise and unnecessary data processing.

DEADBand is set in percentages of the positive part of the signal range.

DEADBand=0 means updating at each change of input reading (i.e. using the full resolution of the A/D converter, but no unnecessary updates).

DEADBand= –1 forces update at each reading.

5. Limit check

In the limit check part of the element you determine if and how limit checking will be performed. The result is presented in the output terminals and is thus available to PC and other programs. If the NORM_TReat terminal is set to 1, each change in limit check status is also sent to the Advant Station 500 Series Operator Station. The main use of this function is for Advant Station 500 Series Operator Station presentation, but it is also a convenient alternative to limit checking with PC element COMP-R.

6. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation and functional unit documentation.

7. Error handling

The control function of a thermocouple input indicates errors via the ERR and OVERFLOW terminals.
Four different types of errors can occur, two caused by the system, and two caused by the operator.

1. ERR is set in the TC board element

   This occurs if the module function is defined non-functional by the supervision function. This can be caused by missing, wrong module type, malfunctioning or incorrectly strapped hardware, errors in software or data base.

   ERR in a TC board is copied to the error handling functions of all channels and the error flag ERR is set.

   VALUE will be set according to ERR_CTRL and ERR_VAL if this occurs. The F (Fault) LED on the module shows steady light. ERR is reset, if hardware error, within 5 seconds of replacement of the non-functional board.

2. Out-of-range error

   Behavior of OVERFLOW, ERR and VALUE, if the temperature value goes outside the present measurement range, see the table on the following page.

   Detection of out-of-range signals can give indirect information that a transducer has been disconnected, cut electrical connections, other hardware errors or system errors on signal level.

   ERR and OVERFLOW are reset when the error is corrected.

3. ERR is set when the SERVICE terminal of the TC board has been set to 0 by the operators

   The red F (Fault) LED on the module does not show any light.

   ERR is reset when SERVICE is set to 1 again.

4. The board was not implemented during the latest system init

   The red F (Fault) LED on the module front shows steady light.

   ERR is reset by setting IMPL in TC module element.

The ERR and OVERFLOW terminals of the Thermocouple element and the ERR terminal of the TC board element can be connected to a PC program where the desired function may be built.

Indication at out-of-range AI signal

Electrical signal	**Parameter**	**Status indications**				**Value indication/limit**
	Signal	Module		Signal		
(% of max. input)	OVF_CTRL	WARNING	ERR	OVERFLOW	ERR	VALUE (% of RANGE_MAX - RANGE_MIN)
> 2.4% over max input range	0 1	1 0	0 0	1 1	1 0	(1) 2.4% over RANGE_MAX
> 2.4% below min input range	0 1	0 0	0 0	0 0	0 0	(1) 2.4% below RANGE_MIN

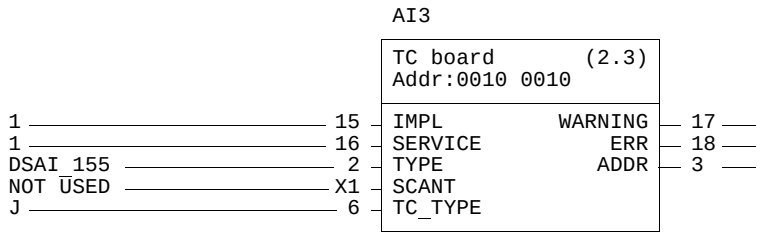
(1) Frozen at the value of the preceding sample, provided that OVERFLOW = 1 or set to the value of ERR_VAL if ERR_CTRL=1.

TC board AITC

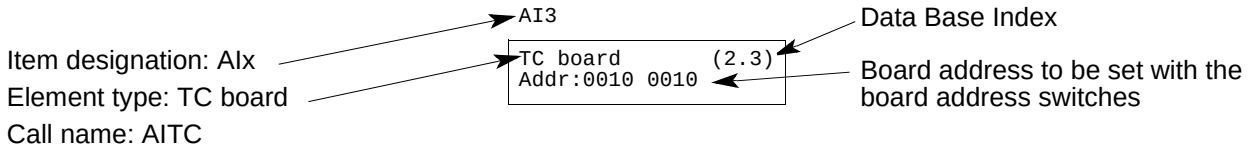
Summary

The TC board data base element holds the data values of the terminals associated to a thermocouple input board. The element is superior to the thermocouple signal elements associated to the input channels in the board.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
15	IMPL	user	1	B(r)	0=the board is spare 1=the board is **IMPL**emented	–
16	SERVICE	user, dialog	1	B(r/w)	The in-**SERVICE** terminal controls/ shows whether the board is in service or has been taken out of service.	–
2	TYPE	user	DSAI_ 155	–	No other board **TYPE** available at present.	–
X1	SCANT	–	NOT USED	–	**SCANT**ime interval. Not used.	–
6	TC_TYPE	user	J	–	**T**hermo**C**ouple **TYPE**: B, C, E, J, K, R, R1680, S, T and T385.	–

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
17	WARNING	system	–	B(r)	Not used.	–
18	ERR	system	–	B(r)	**ERR**or flag indicating non-functional board.	–
3	ADDR	system	–	–	Board location within the I/O **ADDR**ess range, presented in decimal format.	Cannot be changed.

Available Thermocouple Types

Code	Thermocouple Type	Temperature Range	References
B	Platinum - 30% Rhodium/Platinum-6% Rhodium, Pt-30Rh/Pt-6Rh	40 °C to 1820 °C 104 °F to 3308 °F	IEC 584-1 1977
C	Tungsten - 5% Rhenium/Tungsten-26% Rhenium, W-5Re/W-26Re	0 °C to 2300 °C 32 °F to 4172 °F	Hoskins Mfg. Co type C. This type is not approved by IEC
E	Nickel - 10% Chromium / Copper -Nickel, Ni - 10% Cr / Cu - /Ni	–270 °C to 870 °C –454 °F to 1598 °F	IEC 584-1 1977
J	Iron/Copper - Nickel Fe/Cu-Ni	–210 °C to 1200 °C –346 °F to 2192 °F	IEC 584-1 1977
K	Nickel - Chromium/Nickel-Aluminum, Ni-Cr/Ni-Al	–270 °C to 1372 °C –454 °F to 2500 °F	IEC 584-1 1977 (DIN 43710 1977)
R	Platinum - 13% Rhodium/Platinum Pt-13Rh/Pt	–50 °C to 1768 °C –58 °F to 3214 °F	IEC 584-1 1977
R1680	Platinum - 13% Rhodium/Platinum Pt-13Rh/Pt	–50 °C to 1680 °C –58 °F to 3056 °F	IEC 584-1 1977
S	Platinum - 10% Rhodium/Platinum Pt-10Rh/Pt	–50 °C to 1768 °C –58 °F to 3214 °F	IEC 584-1 1977 (DIN 43710 1977)
T	Copper/Copper - Nickel Cu/Cu-Ni	–270 °C to 400 °C –454 °F to 752 °F	IEC 584-1 1977
T385	Copper/Copper - Nickel Cu/Cu-N	–270 °C to 385 °C –454 °F to 725 °F	IEC 584-1 1977

Hardware function

The process signal lines are connected in the connection unit. This unit performs over-voltage protection and hf-filtering.

The board contains

- a multiplexer that selects input
- measuring amplifier and
- an integrating A/D-converter.

The multiplexer and A/D converter are CPU controlled.

The integrating time of the A/D-converter is strap selectable. It should be chosen according to ambient noise frequency, that is power frequency. 20, 30, 50 or 60 Hz is available.

Three reference channels are included. Two are used to calibrate the A/D-converter. One must be close to 0, the other close to 10 mV, otherwise ERRor is reported. The third reference channel is used for cold junction temperature measuring -40 – +100 °C.

A red LED indicates fault or uninitiated board. A yellow LED indicates A/D conversion (board scanned).

Address selection: The address to be set is given in the head of the data base element.

Example: the third analog input board uses hexadecimal address 22=0010 0010 (i.e. address bits 5 and 1 set).

Board Set-up Procedure

With the data base element you set up the board for the process communication program.

The board set-up procedure includes:

1. Implementation
2. Disabling
3. Board type selection
4. Self test and board change test
5. Thermocouple selection
6. Error handling.

1. Implementation

During system INIT the board and its signals are included in the tables that define the process communication. If you set IMPL=0 on the board, The board and the channels associated with it, are removed from the PDC's tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the board. This saves some but not all CPU load. This function must be used if the board will be unplugged during operation. If Advant Station 500 Series Operation Station is included in your system – see Advant Station 500 Series Operation Station documentation.

3. Board type selection

DSAI_155 has 14 inputs and 1 channel for cold junction temperature, 13 bits solution and sign. At present, no other board types are available.

4. Self test and board change test

The board performs a self-test at 5 seconds intervals using the reference channels (on-board inputs). This performs calibration of the inputs. At the same time, a test that enables board change during operation is performed.

5. Thermocouple selection

TC type can be changed during operation. For available thermocouple types refer to table for Thermocouple types.

Linearization is performed for each TC type. The system automatically selects the appropriate amplification for the selected TC type to obtain the full nominal range of the thermocouple.

For the T and R type you can select T385 resp. R1680 to get better resolution on condition that the differential temperature between measuring point and cold junction not exceeds 385 °C resp. 1680 °C. Thereby a more suitable amplification range is used in the measuring amplifier.

6. Error handling

The ERR is set in the TC board element if the board is determined non-functional by the supervision function. Typical errors are non-existing, malfunctioning or improperly strapped hardware or software or database errors. Missing or improperly adjusted reference or cold junctions channels are errors special for this board.

The ERR terminal can be connected to the PC program for desired function. ERR is reset, if hardware error, within 5 seconds of replacement of the non-functional board.

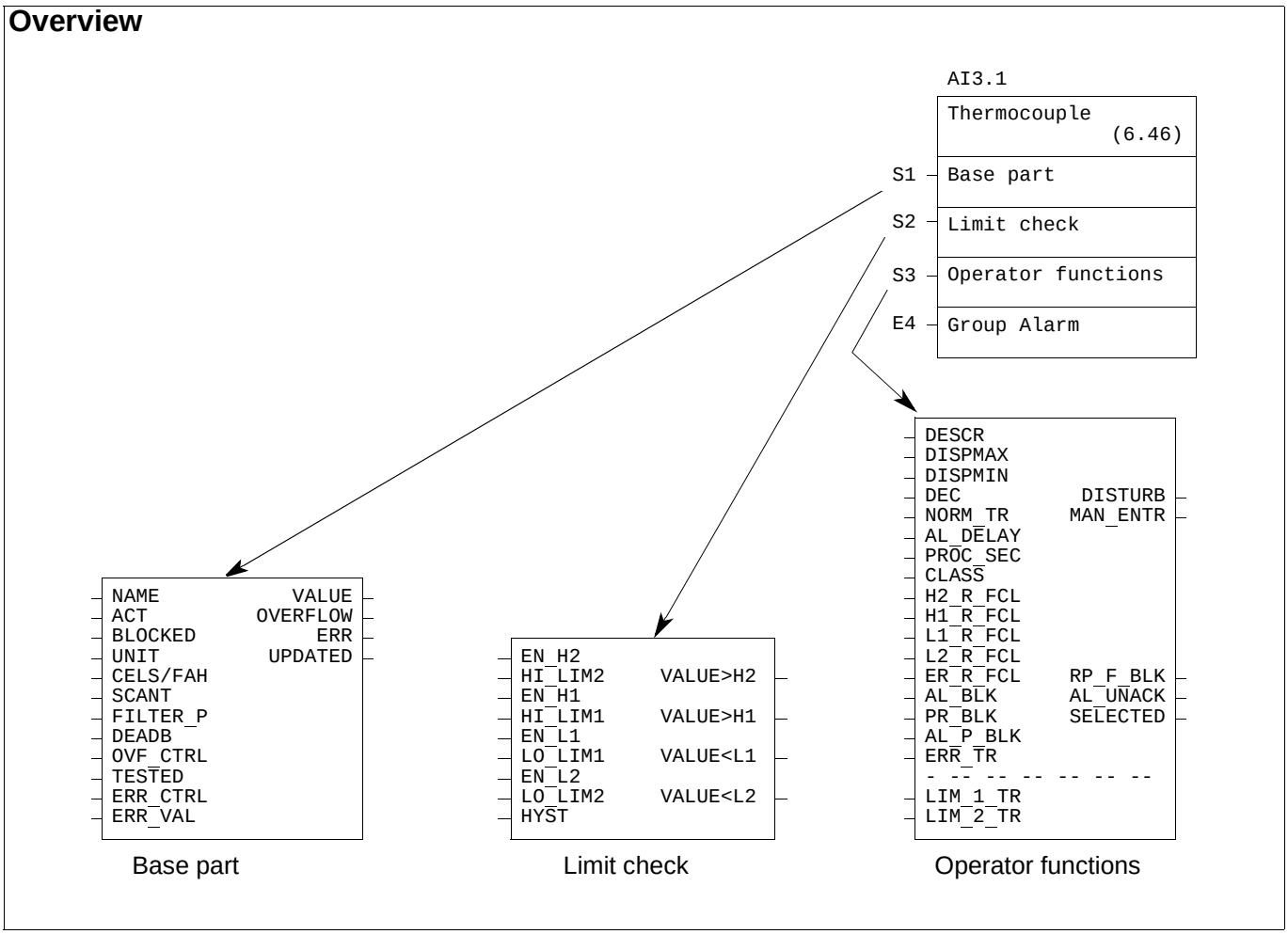
The fault lamp on the board is lit when ERR is set (if the CPU still has access to the board).

Thermocouple AITCS

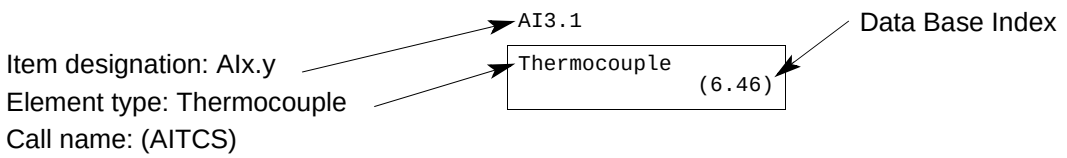
Summary

The Thermocouple data base element holds the data values of the terminals associated to an analog input channel for temperature transducers of thermocouple. The element is subordinate to the TC board data base element. For information about the extension parts of Group Alarm see data base element Group Member.

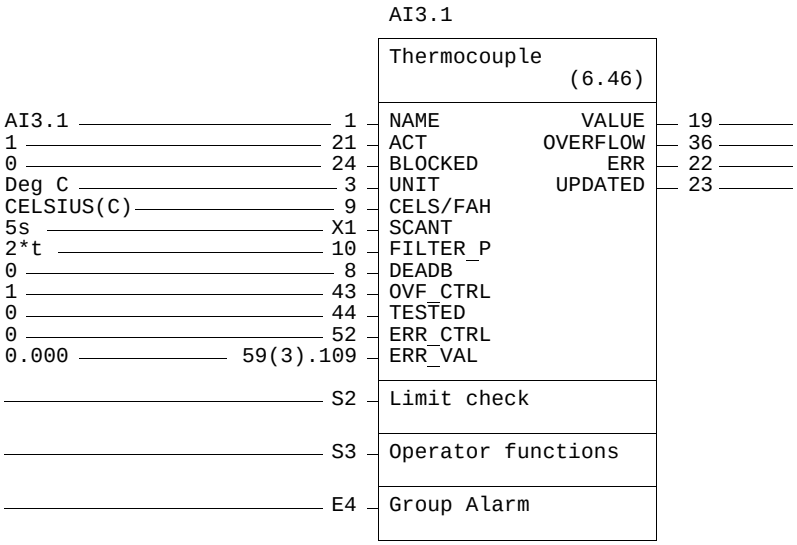
Overview



Head



Base part



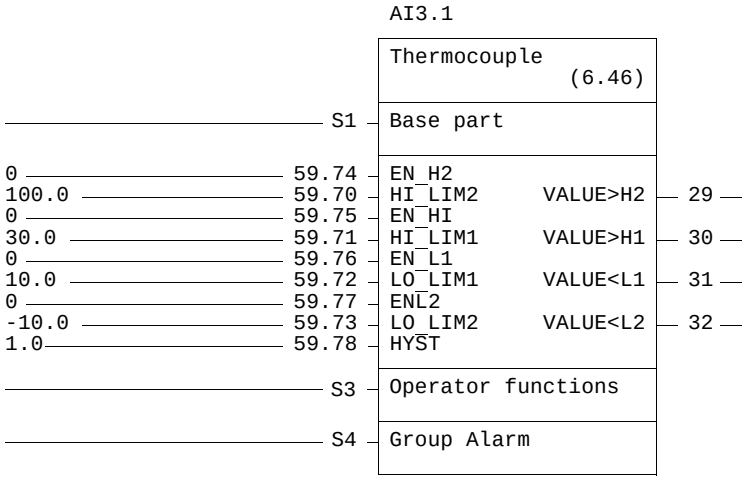
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AIx.y	–	Each Thermocouple signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
21	ACT	user	1	B(r)	1=the signal is **ACT**ive 0=the signal is spare	–
24	BLOCKED	dialog	0	B(r/w)	1=updating of signal value is **BLOCKED**.	–
3	UNIT	user	Deg C	–	The measured value **UNIT** in engineering units.	Max. 6 characters shown in Operator Station and data base element.

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
9	CELS/FAH	user	CELSIUS (C)	–	CELS/FAH can be changed to give VALUE in degrees **FAH**renheit instead of default **CEL**sius. CELSIUS (C), FAHRENHEIT (F)	–
X1	SCANT	user	5s	–	**SCAN T**ime interval for input. See Introduction, section ”Allowed SCANT values”.	–
10	FILTER_P	user	2∗T	–	Input filtering in software. **FILTER P**arameter depends on SCANT(T), 0,2∗T, 4∗T, 8∗T, 16∗T, 255∗T.	Hardware filtering is obtained through integrating A/D-conversion.
8	DEADB	user	0	–	Signal **DEADB**and limit percentage. If the signal variation exceeds the limit, the value will be updated.	Available limits: 0.0%, 0.025%, 0.05%, 0.1%, 0.2%, 0.4%, 0.8%, 1.6%. 3.2%, –1 (updated at each scan. See Function: ”3. Variation Control”.
43	OVF_CTRL	user	1	B(r/w)	1=alternative **OV**er**F**low **C**on**TR**o**L**.	See Function ”7. Error handling”.
44	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
52	ERR_CTRL	user	0	B(r/w)	**ERR**or **C**on**TR**o**L**. 0=Value is frozen when error occurs. 1=Value is set to the value of ERR_VAL when error occurs.	–
59(3).109	ERR_VAL	user	0.0	R(r/w)	**ERR**or **VAL**ue. Value to be set when error occurs and ERR_CTRL=1.	–
19	VALUE	system	–	R(r/w)	Signal **VALUE** in engineering unit, Celsius or Fahrenheit.	–
36	OVERFLOW	system	–	B(r/w)	1=dynamic indication of **OVERFLOW**	See Function ”7. Error handling”.
22	ERR	system	–	B(r/w)	1=hardware or configuration **ERR**or.	–
23	UPDATED	system	–	B(r/w)	1=system indicates that the value has been **UPDATED**.	Cannot be affected by user.

Limit check



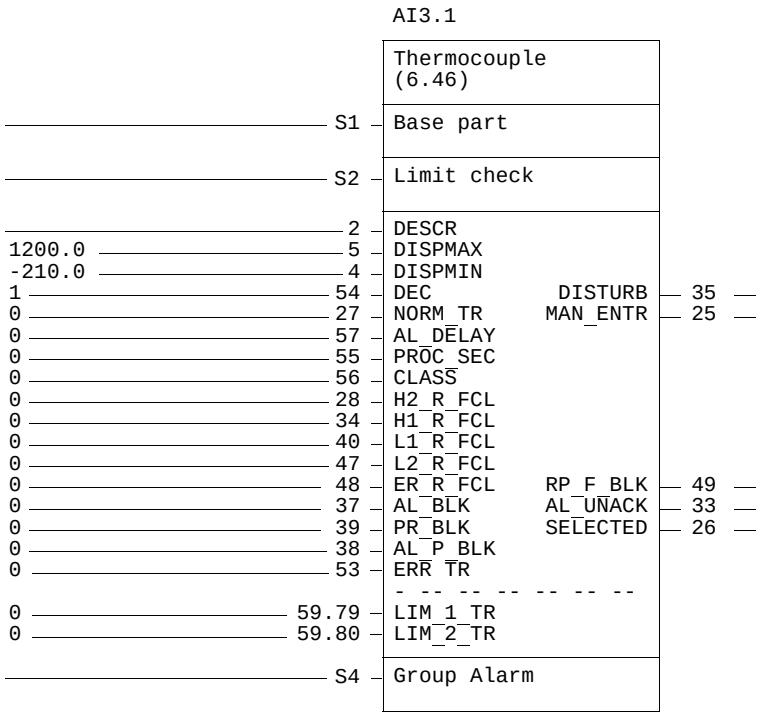
Terminal Description, Limit check

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
59.74	EN_H2	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **2**.	–
59.70	HI_LIM2	user	100.0	R(r/w)	**HI**gh **LIM**it no. **2** in engineering unit.	Accepted value HI_LIM2 > HI_LIM1.
59.75	EN_H1	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **1**.	–
59.71	HI_LIM1	user	30.0	R(r/w)	**HI**gh **LIM**it no. **1** in engineering unit.	Accepted value LO_LIM1 < HI_LIM1 < HI_LIM2.
59.76	EN_L1	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **1**.	–
59.72	LO_LIM1	user	10.0	R(r/w)	**LO**wer **LIM**it no. **1** in engineering unit.	Accepted value HI_LIM1 > LO_LIM1 > LO_LIM2.
59.77	EN_L2	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **2**.	–
59.73	LO_LIM2	user	–10.0	R(r/w)	**LO**wer **LIM**it no. **2** in engineering unit.	Accepted value LO_LIM2 < LO_LIM1.
59.78	HYST	user	1.0	R(r/w)	**HYST**eresis for limit check in engineering units.	The hysteresis is located within each limit.
29	VALUE>H2	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **2**.	Cannot be affected by user.

Terminal Description, Limit check (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
30	VALUE>H1	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **1**.	Cannot be affected by user.
31	VALUE<L1	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **1**.	Cannot be affected by user.
32	VALUE<L2	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **2**.	Cannot be affected by user.

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Max. 20 characters. You may enter any information regarding the signal.

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
5	DISPMAX	user	1200.0	R(r/w)	**MAX**imum value **DISP**layed on screen.	Derives scaling for screen.
4	DISPMIN	user	–210.0	R(r/w)	**MIN**imum value **DISP**layed on screen.	Derives scaling for screen.
54	DEC	user	1	–	The number of **DEC**imals to be presented by Operator Station.	0 - 6 decimals.
27	NORM_TR	user	0	B(r/w)	1=**NORM**al event driven updating on displays and lists in Operator Station.	0=no event driven updating in Operator Station.
57	AL_DELAY	user, PC	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds: 1 - 127.	0 = no delay.
55	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
56	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
28	H2_R_FCL	user	0	B(r)	**H**igh limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H2 limit alarms.	–
34	H1_R_FCL	user	0	B(r)	**H**igh limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H1 limit alarms.	–
40	L1_R_FCL	user	0	B(r)	**L**ow limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L1 limit alarms.	–
47	L2_R_FCL	user	0	B(r)	**L**ow limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L2 limit alarms.	–
48	ER_R_FCL	user	0	B(r)	**ER**ror **R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating error alarms.	–
37	AL_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
39	PR_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **PR**intout in Operator Station.	–

Terminal Description, Operator functions (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
38	AL_P_BLK	PC	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K**. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC-program or Engineering Station.	–
53	ERR_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the **TR**eatment in Operator Station of signal **ERR**ors, and operator commands.	Recommended settings 0=No event reporting 2=Event reporting incl. alarm handling
59.79	LIM_1_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H1 and L**1 LIM**it **TR**ansgressions.	Recommended settings 0=No event reporting 3=Event reporting, no alarm handling 4=Event reporting, incl. alarm handling
59.80	LIM_2_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H2 and L**2 LIM**it **TR**ansgressions.	Recommended settings 0=No event reporting 3=Event reporting, no alarm handling 4=Event reporting, incl. alarm handling
35	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indication whether a state of alarm exists in the element.	Cannot be affected by user.
25	MAN_ENTR	system	–	B(r/w)	1=Flag indication that the signal VALUE has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	–
49	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**lag **BL**oc**K**. Flag indicating that a repeating alarm is present in the element but that the indication has been blocked.	–
33	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	–
26	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–

Function

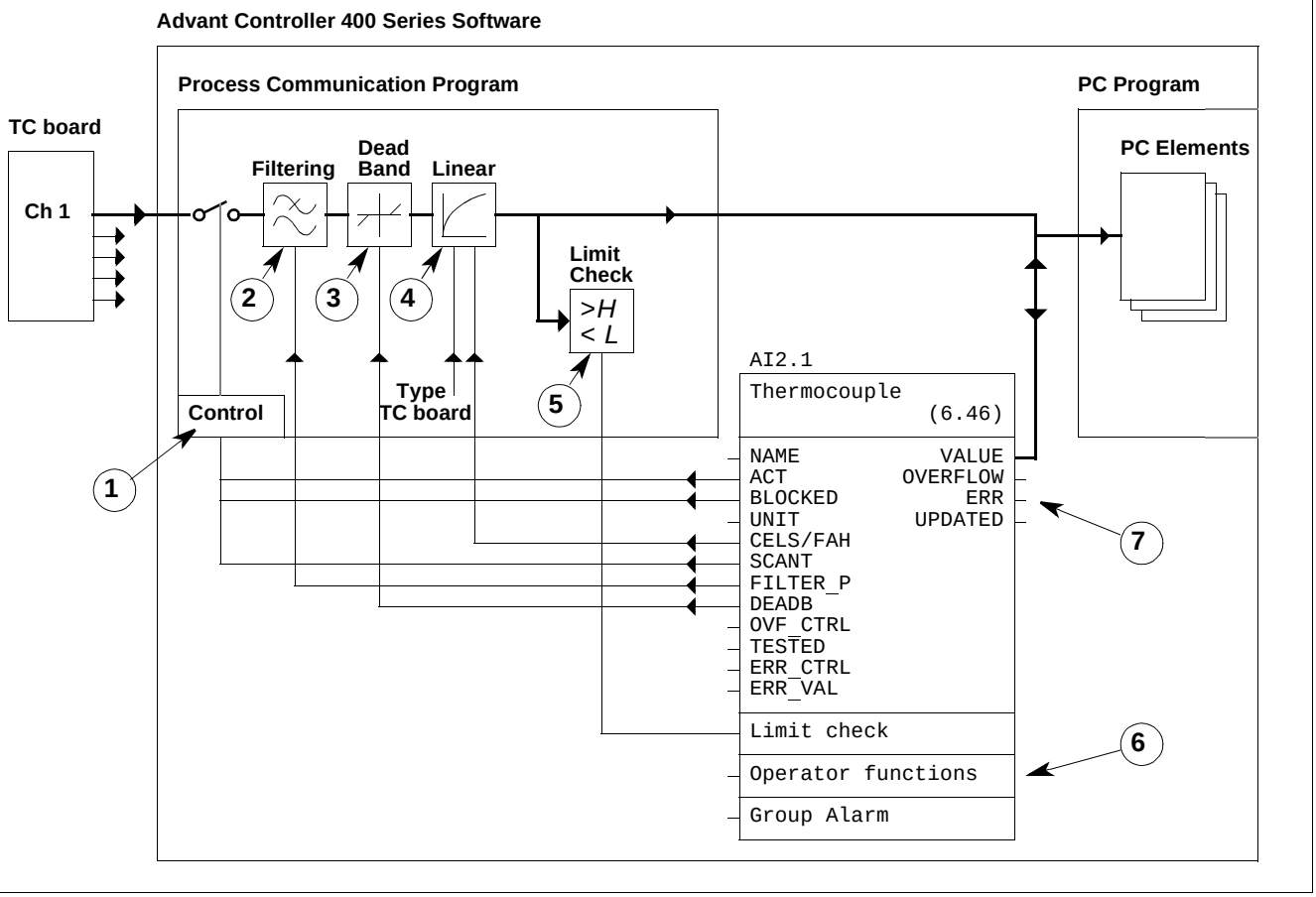
The Thermocouple data base element is used for analog input signals from thermocouples. The signal handling carried out by the process communication program is controlled by the Thermocouple element. Limit check and connection to Advant Station 500 Series Operator Station may also be defined in the Thermocouple element.

The signal processing controlled by the element includes:

1. Updating
2. Filtering
3. Variation Control (deadband)
4. Linearization
5. Limit Check
6. Operator Station functions
7. Error handling.

The figure below illustrates this process.

Function of Thermocouple Terminals



1. Updating

The temperature signal is converted and read at intervals determined by the terminal SCANTime. You should set SCANT to the requirements of your system.If you set BLOCKED, the data acquisition stops, allowing manual entry of VALUE. To disable the data acquisition completely, you set ACTivated to 0. This excludes the input from processing.

2. Filtering

You may select software filtering of the process value. The FILTER_Parameter time constant is a quantity including SCANTime. For example 2∗T at a scan-time of 10 seconds means a time constant of 20 seconds. The filter corresponds to a one-pole low-pass filter. FILTER_P=0 disables the software filter.

3. Variation control

With DEADBand terminal you select the accuracy of the up-dating. If the input value has not changed more than the DEADBand, since the previous update, no updating or further processing will take place. This function is valuable to reduce signal noise and unnecessary data processing.

DEADBand=0 means updating at each change of input reading (i.e. using the full resolution of the A/D converter, but no unnecessary updates).

DEADBand= –1 forces update at each reading.

For this input a deadband is needed only in special cases (if this is done please note that deadband is in percent before linearization).

NOTE

The working range of the thermocouple is less than the working range of the A/D-converter. The deadband must therefore be calculated as percent of a fictive range. The following table shows the fictive range for different types of thermocouples.

Fictive Range for Different Types of Thermocouples

Type of thermocouple		B	C	E	J	K	R	R1680	S	T	T385
Fictive temperature for calculating of deadband	° C	5150	4890	2050	2700	3910	6550	3290	3700	1500	750
	° F	9300	8835	3720	4890	7070	11820	5955	6690	2730	1380

4. Linearization

Linearization according to selected TC TYPE and conversion to a temperature measurement value (Celsius or Fahrenheit).

The CELS/FAH terminal is used to select representation in degrees Celsius (Centigrade) or Fahrenheit. Note that UNIT should be changed separately. VALUE (and limits DISPMAX and DISPMIN) are expressed in this unit. The conversion uses the TC TYPE terminal in the TC Board element. The terminal is common to all channels on a board.

5. Limit check

In the limit check part of the element you determine if and how limit checking will be performed. The result is presented in the output terminals and is thus available to PC and other programs. If the NORM_TReat terminal is set to 1, each change in limit check status is also sent to the Advant Station 500 Series Operator Station. The main use of this function is for Advant Station 500 Series Operator Station presentation, but it is also a convenient alternative to limit checking with PC element COMP-R.

6. Operator Station function

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation and function unit documentation.

7. Error handling

The control function of a thermocouple input indicates errors via the ERR and OVERFLOW terminals.
Four different types of errors can occur, two caused by the system, and two caused by the operator.

1. ERR is set in the TC board element

   This occurs if the board function is defined non-functional by the supervision function. This can be caused by missing, malfunctioning or incorrectly strapped hardware, errors in software or data base.

   ERR in a TC board is copied to the error handling functions of all channels and the error flag ERR is set.

   VALUE is not updated if this occurs and the old value is retained. The LED on the board shows steady light. ERR is reset, if hardware error, within 5 seconds of replacement of the non-functional board.

2. Out-of-range error

   OVERFLOW is set if the input signal goes over or under the maximum or minimum signal range that the hardware can handle.

   ERR is set if the temperature value goes outside the present measurement range and if not OVERFLOW is set at the same time.

   VALUE is set to the maximum resp. minimum value if the temperature value goes outside the present measurement range.

   If OVERFLOW is set at the same time, the out-of-range handling will be the same as for R1680 and T385.

   NOTE

   Out-of-range error for R1680 and T385: ERR is set if the temperature value reaches “underflow” or “overflow”. Different ways to handle this can be selected through the OVF_CTRL terminal. If OVF_CTRL=1 then VALUE is set to the maximum or minimum value when “overflow” or “underflow” respectively, is reached. OVERFLOW is set. The ERR terminal is not affected.

   If on the other hand, OVFCTRL=0 then the VALUE is retained at the preceding value if “overflow” or “underflow” occurs. OVERFLOW is set and ERR is also set.

   Detection of out-of-range signals can give indirect information that a transducer has been disconnect ted or broken, cut electrical connections, other hardware errors or system errors on signal level.

   ERR and OVERFLOW are reset when the error has been dealt with.

3. ERR is set when the SERVICE terminal of the TC board has been set to 0 by the operators

   The LED does not show any light. ERR is reset when SERVICE is set to 1 again.

4. The board was not implemented during the latest system init

   The LED on the board front shows steady light. ERR is reset by setting IMPL in TC board.

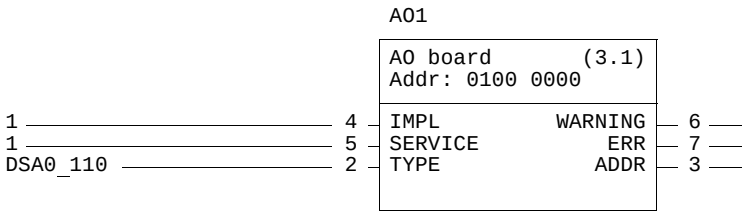
The ERR and OVERFLOW terminals of the Thermocouple element and the ERR terminal of the TC board element can be connected to a PC program where the desired function may be built.

AO board AO

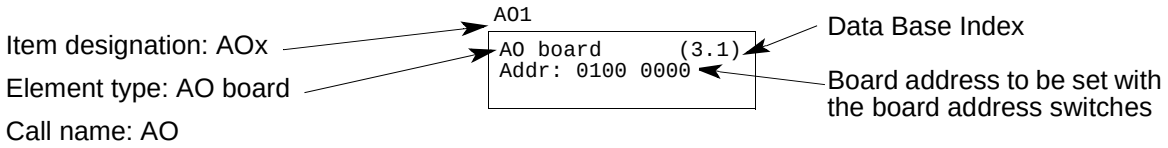
Summary

The AO board data base element holds the data values of the terminals associated to an analog output board for standard current and voltage signals. The element is superior to the signal elements associated to the analog output channels in the board.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
4	IMPL	user	1	B(r)	0=the board is spare 1=the board is **IMPL**emented	–
5	SERVICE	user, dialog	1	B(r/w)	The in-**SERVICE** terminal controls/ shows whether the board is in service or has been taken out of service.	–
2	TYPE	user	DSAO_ 110	–	Board **TYPE**: DSAO_110, DSAO_120 or DSAO_130.	TYPE must be selected when creating the element. The full name including "_" must be entered.
6	WARNING	system	–	B(r)	Not used.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
7	ERR	system	–	B(r)	**ERR**or flag indicating non-functional board.	–
3	ADDR	system	–	–	Board location within the I/O **ADDR**ess range, presented in decimal format.	Cannot be changed.

Function

The output lines to the process are connected in the connection unit. This unit performs over-voltage suppression.

Different boards have different electrical terminals, e.g. galvanic isolation and signal resolution. All channels on all boards have a D/A-converter and an output amplifier for signal adaptation to current and voltage signals. Each channel can be adapted individually.

Available ranges and how to select them is described in the data base element data sheet for the Analog Output signal. See the manual *Advant Controller 410 User's Guide* and *Advant Controller 450 User's Guide* for details on hardware.

Address selection: The address to be set is given in the head of the data base element.

Example: the first analog output board uses hexadecimal address 40=0100 0000 (i.e. address bit 6 set).

A red LED indicates faulty or uninitiated board.

Board Set-up Procedure

The board set-up includes:

1. Implementation
2. Disabling
3. Board type
4. Error handling.

1. Implementation

During system INIT the board and its signals are included in the tables that define the process communication. If you set IMPL=0 on the board, the board and the channels associated with it are removed from the PDC's tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the board. This saves some but not all CPU load. This function will be used if a board must be unplugged during operation. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system.

3. Board type selection

The full name of the board including "_" must be entered. TYPE must be selected when creating the elements. Please note that version designation is omitted when you enter board type. For example, DSAO 120A is to be entered as DSAO_120.

Once created, a board type can be changed if the new board type has the same number of channels as the old one. If not, the data base element and all the subordinated signal elements must be deleted.

4. Error handling

The ERR terminal is set in AO board element, if the board is determined non-functional, by the control function.

Indicated errors are non-existent, malfunctioning or improperly strapped hardware or software or data base errors.

The ERR terminal can be connected to the PC program for desired function.

ERR is reset, at hardware errors, automatically within 5 seconds of replacement of the board.

The fault lamp on the board is lit when ERR is set (if the CPU still has access to the board).

AO module AO810, AO820, AO890, AO895

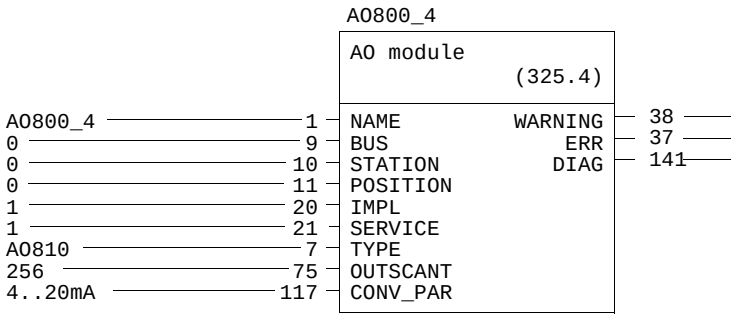
Summary

The AO module data base element specifies an Analog Output hardware module inserted in an S800 I/O station. The data base element is superior to the signal elements associated to the analog output channels in the module.

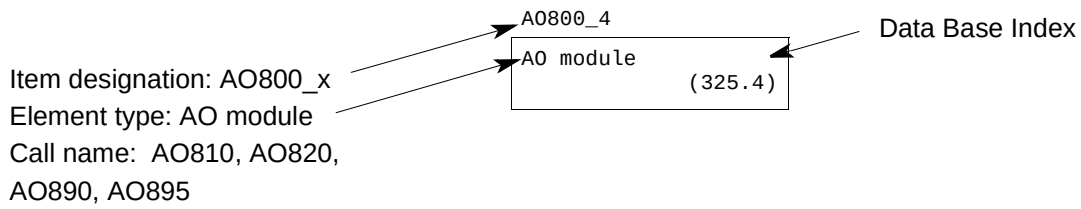
The following analog output modules are supported:

- AO810: 8 channels for 0(4) ... 20 mA
- AO820: 4 individually galvanically isolated channels for ± 20 mA and ± 10 V
- AO890: 8 channels with Intrinsic Safety interface for 0(4) ... 20 mA
- AO895: 8 channels with Intrinsic Safety and HART interface for 0(4) ... 20 mA.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AO800_x	–	Unique **NAME** of the I/O module.	Maximum 20 characters.

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	
20	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows wether the module is in service or has been taken out of service.	–
7	TYPE	predef	AO810/ AO820/ AO890/ AO895	–	Module **TYPE** designation.	–
75	OUTSCANT	user	256	–	Fieldbus **OUT**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–
117	CONV_PAR	user	4 - 20mA	–	**CONV**ersion **PAR**ameter. Default value for the I/O signal elements: **For AO810, AO890/AO895:** 0..20mA, 4..20mA **For AO820:** –20..20mA, 0..20mA, 4..20mA, -10..10V, 0..10V, 2..10V	–
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
141	DIAG	system	–	I(r)	**DIAG**nostics.	See section “S800 I/O module DIAG terminal” in the Introduction.

Signal Ranges

Conversion Parameter

AO810/ AO890/ AO895

Current	0..20mA	4..20mA

AO820

Voltage	–10..10V	0..10V	2..10V
Current	–20..20mA	0..20mA	4..20mA

Function of the AO810, AO820, AO890 and AO895 modules

The process signal cables are connected to the termination unit.

All channels have a D/A-converter and an output amplifier for signal adaptation to current signals. Each channel can be adapted individually.

HART communication (only AO895).

Refer to the *S800 I/O User's Guide* for more detailed information regarding the module.

Termination Units for the AO module

Module	Termination Units
AO810/AO820	TU810, TU830
AO890/AO895	TU890

Module Set-up Procedure

There is no specific configuration in the data base for HART communication.

The module set-up includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of OUTSCANT
5. Default signal range
6. Error handling.

1. Implementation

During system INIT the module and its signals are included in the tables that define the process communication. If you set IMPL=0 on the module, the module and the channels associated with it are removed from the process communication tables at the next scan.

1. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation, to avoid unnecessary system messages. See *Advant Station 500 Series Operator Station* manual if Advant Station 500 Series Operator Station is included in your system

2. Selection of address (BUS, STATION, POSITION) terminals

How to select the address terminals BUS, STATION and POSITION can be found in section “Address terminals BUS, STATION, POSITION and SUBPOS“ in the Introduction.

3. Selection of OUTSCANT

The OUTSCANT terminal defines the cycle time to be used on Advant Fieldbus 100 to send the output value from AC 400 Series Controller to the I/O station. The selection of cycle time (OUTSCANT) shall be chosen with care due to bus bandwidth. The maximum load on AF 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User's Guide*. The following table describes the load generated by the AO module for all available cycle times:

Generated AF 100 load in percent at different cycle times on OUTSCANT

	1ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
AO810/ AO890/ AO895	25.225	12.625	6.325	3.175	1.600	0.812	0.418	0.221	0.123	0.074	0.049	0.037	0.031
AO820	15.6	7.8	3.9	1.95	0.975	0.488	0.244	0.122	0.061	0.03	0.015	0.008	0.004

4. Default signal range

As a typing aid, you may enter normal signal range for this module as CONV_PAR, when creating the element. This range will be the default range for all subordinated signal elements. CONV_PAR in this element is used only when creating signal elements.

5. Error handling

The ERR terminal is set in AO module element, if the module is determined non-functional, by the control function. Indicated errors are non-existent hardware, wrong module type, malfunctioning or software or data base errors. The ERR terminal can be connected to the PC program for desired function. ERR is reset, at hardware errors, automatically after replacement of the faulty module.

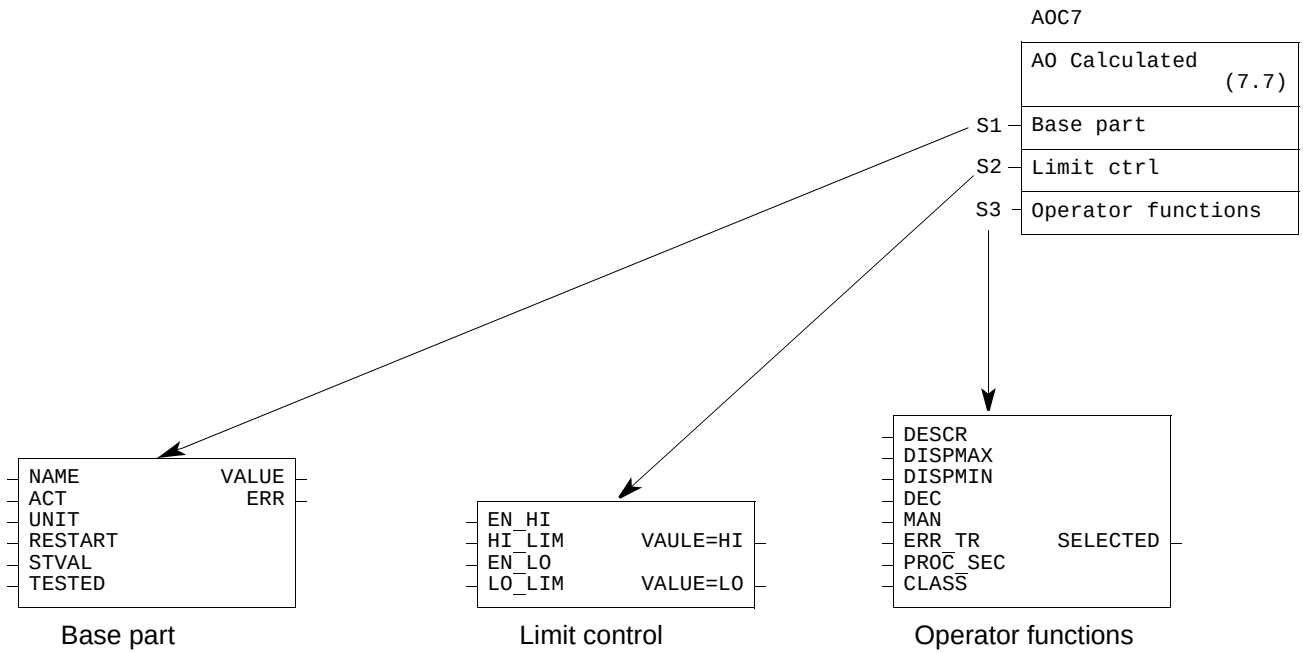
The DIAG terminal provides for a more specific information about the I/O module diagnostics, see section “S800 I/O module DIAG terminal“ in the Introduction.

AO Calculated AOC

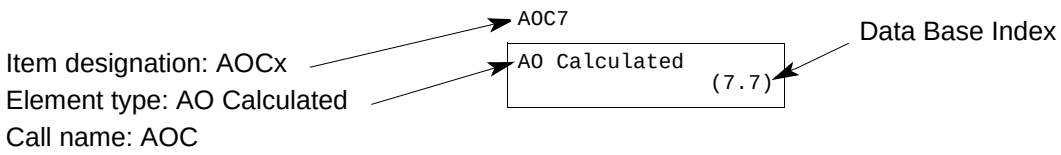
Summary

The purpose of the AO Calculated data base element is to supply Operator functions - similar to those for an analog output - to any numerical value. The AO Calculated data base element holds data for these functions.

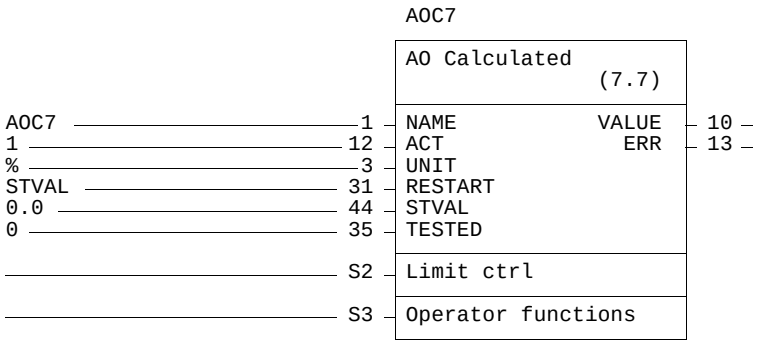
Overview



Head



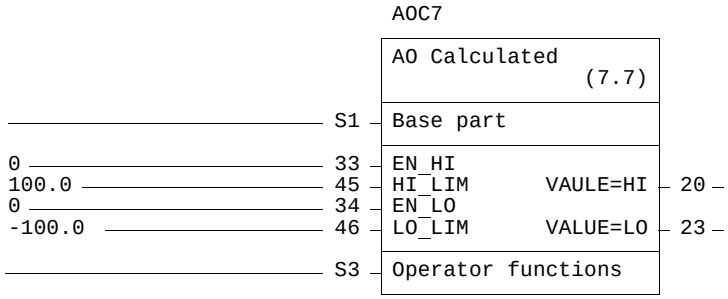
Base part



Terminal Description, Base part

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	user	AOCx	–	Each AO Calculated signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
12	ACT	user	1	B(r)	1=the signal is **ACT**ive 0=the signal is spare	–
3	UNIT	user	%	–	The signal **UNIT** in engineering unit.	Maximum 6 characters. Shown in Operator Station and data base element.
31	RESTART	user	STVAL	B(r/w)	**RESTART** selects output value at system restart. STVAL=restart value defined by terminal STVAL VALUE=the last value is selected as restart value	–
44	STVAL	user	0.0	R(r/w)	**ST**art **VAL**ue for output.	–
35	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
10	VALUE	system	–	R(r/w)	Signal **VALUE** in engineering unit.	–
13	ERR	system	–	B(r/w)	**ERR**or. 1=configuration error.	Can only be reset by correcting the error.

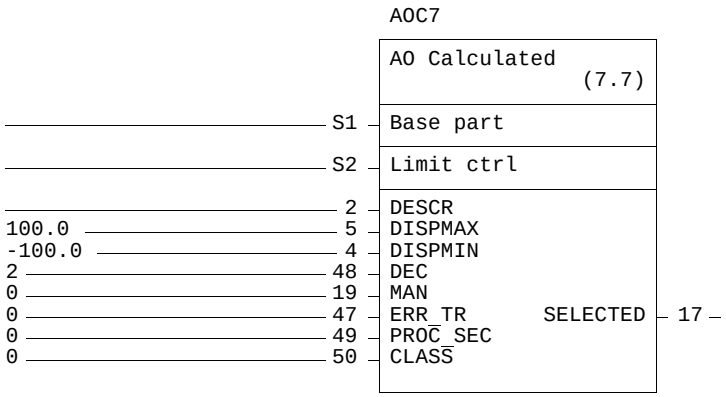
Limit control



Terminal Description, Limit control

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
33	EN_HI	user	0	B(r/w)	**EN**ables limitation of output signal to **HI**gh limit.	–
45	HI_LIM	user	100.0	R(r/w)	**HI**gh **LIM**it for output signal in engineering unit.	–
34	EN_LO	user	0	B(r/w)	**EN**ables limitation of output signal to **LO**w limit.	–
46	LO_LIM	user	–100.0	R(r/w)	**LO**w **LIM**it for output signal in engineering unit.	–
20	VALUE=HI	system	–	B(r/w)	Flag indicating that the output **VALUE** has been limited to **HI**gh limit.	–
23	VALUE=LO	system	–	B(r/w)	Flag indicating that the output **VALUE** has been limited to **LO**w limit.	–

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Maximum 20 characters. You may enter any information regarding the signal.
5	DISPMAX	user	100.0	R(r)	**DISP MAX**imum output in engineering unit.	Derives scaling.
4	DISPMIN	user	–100.0	R(r)	**DISP MIN**imum output in engineering unit.	Derives scaling.
48	DEC	user	2	–	The number of **DEC**imals to be presented by Operator Station.	0 - 6 decimals.
19	MAN	dialog	0	B(r/w)	Flag indicating that **MAN**ual control by Operator Station operator has been selected.	0=Controlled and updated by PC program.
47	ERR_TR	user	0	–	**ERR**or **TR**eatment. Not used.	–
49	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the object handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
50	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
17	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	Cannot be operated by user.

Function

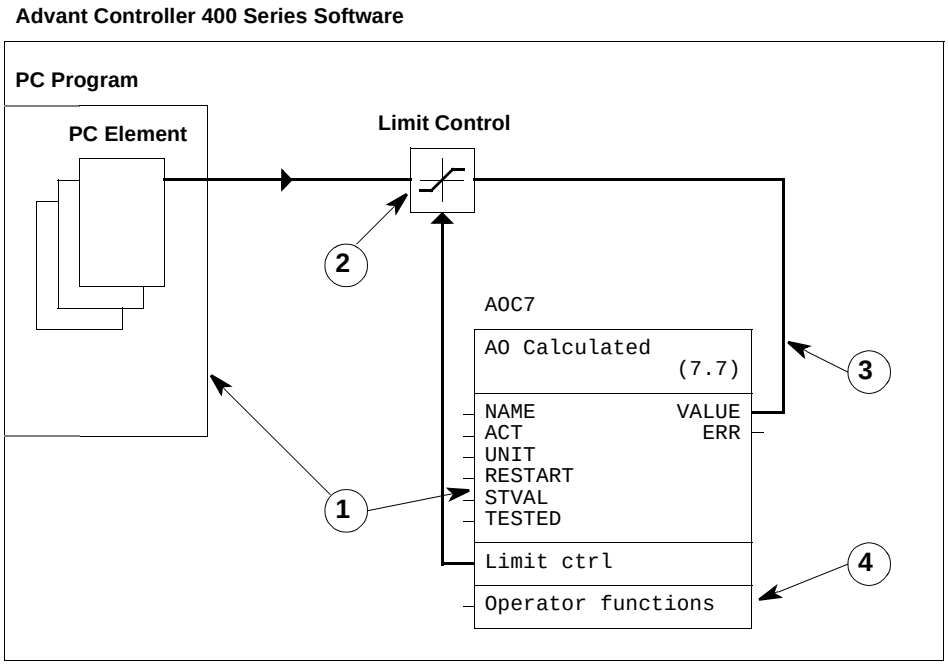
The AO Calculated data base element defines an internal analog output. The value will not be put out on hardware but all MMC functions associated to an analog output will be available for the value.

The signal processing includes:

1. Update request
2. Limit control
3. Update of data base VALUE
4. Operator Station functions
5. Update of values at system init.

The figure on the previous illustrates this process.

Function of AO Calculated Terminals



1. Update request

Update is requested by the PC program connected to the output, by other programs or from the Operator Station terminal.

To disable the signal completely, you set ACTivated to 0.

If update requests are received from different sources, they will all be handled in the sequence received, but only the last one executed in each PC module.

Do not use the same output more than once in your PC programs unless you make sure that the program, control module or block module is OFF for all but one connection, or that they are located in different steps of a sequence. A reset of such a group of outputs will result in one update only.

2. Limit control

Limit Control can be enabled by setting EN_HI or EN_LO and desired HI_LIM or LO_LIM in engineering units.

When input value is above HI_LIM or below LO_LIM the VALUE is limited and VALUE=HI or VALUE=LO is set.

3. Update of data base VALUE

After limit control the signal is stored in VALUE. In the element, the signal is available for connection to PC programs and for monitoring.

4. Operator Station function

If Operator Station is included in your system, please refer to the manual *Advant Station 500 Series Basic Functions User's Guide*.

Update of Values at System Init

The value to be used at system init is determined by the RESTART terminal. The value retained in the VALUE terminal since the last execution is used if RESTART=VALUE.

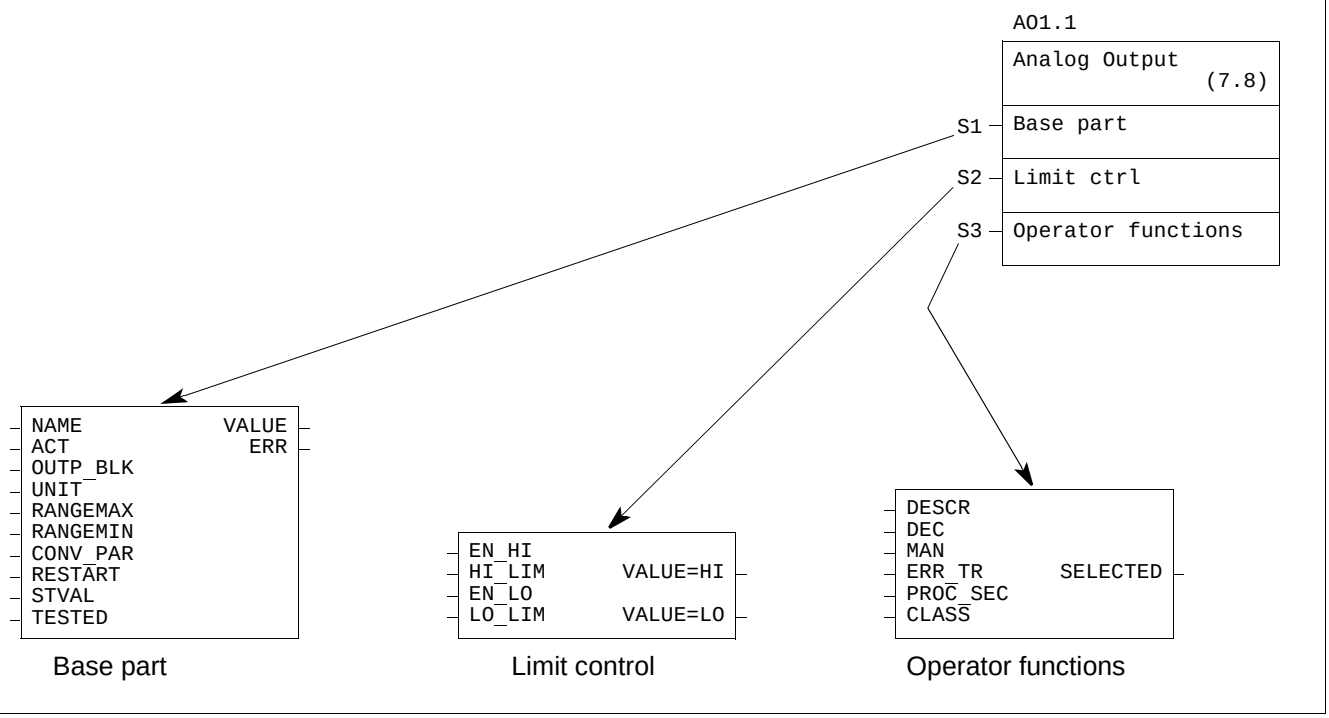
The VALUE terminal is updated with the value of STVAL if RESTART=STVAL.

Analog Output AOS, AOXS, AOXRS

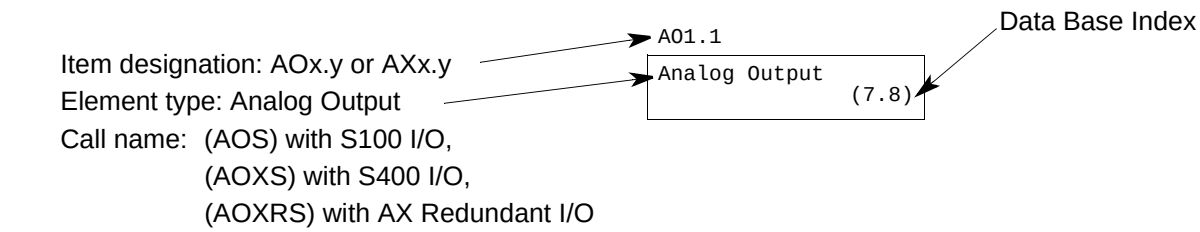
Summary

The data base element Analog Output is subordinate to the AO board data base element, the AX unit data base element or the AX Redundant data base element.

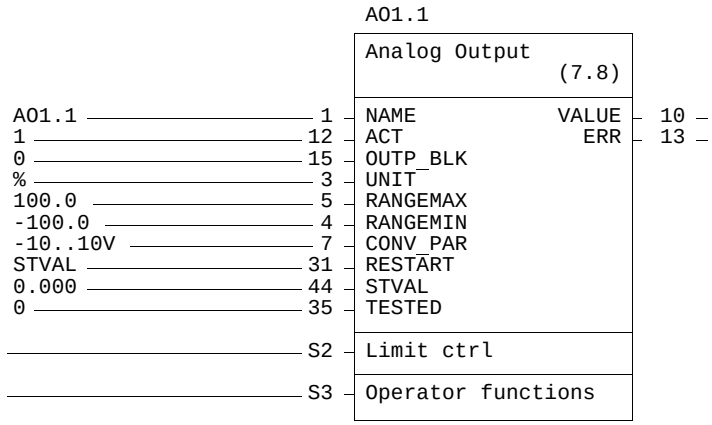
Overview



Head



Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AOx.y, AXx.y *or* AXRx.y	–	Each Analog Output signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
21	ACT	user	1	B(r)	1=the signal is **ACT**ive 0=the signal is spare	–
15	OUTP_BLK	dialog	0	B(r/w)	1=board **OUTP**ut is **BL**oc**K**ed.	VALUE will still be updated.
3	UNIT	user	%	–	The signal **UNIT** in engineering unit. Empty string is entered as a dot (.).	Maximum 6 characters shown in Operator Station and data base element.
5	RANGEMAX	user	100.0	R(r)	**RANGE MAX**imum input for VALUE in engineering unit.	Derives scaling.
4	RANGEMIN	user	–100.0	R(r)	**RANGE MIN**imum input for VALUE in engineering unit.	Derives scaling. Default for AOXRS: 0.0
7	CONV_PAR	user	–10..10V	–	Output signal range in Volts or mA.	Refer to the table for Conversion parameters for S100 I/O. Must also be strapped in AO board.
31	RESTART	user	STVAL	B(r/w)	**RESTART** selects output value at system restart. STVAL=restart value defined by terminal STVAL; VALUE=the last value is selected as restart value.	–

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
44	STVAL	user	0.0	R(r/w)	**ST**art **VAL**ue for output.	–
35	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
10	VALUE	system, user	–	R(r/w)	Output signal **VALUE** in engineering unit.	–
13	ERR	system	–	B(r/w)	**ERR**or.	–

Signal Ranges

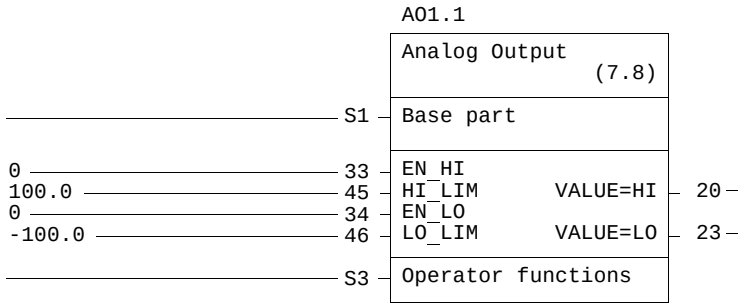
Conversion Parameters, S100 I/O

Voltage	–10.. 10 V	–5.. 5 V	–2.5.. 2.5 V	–1.25.. 1.25 V	0.. 10 V	0.. 5 V	0.. 2.5 V	0.. 1.25 V	2.. 10 V	1.. 5 V	0.5.. 1.25 V	0.25.. 1.25 V
Current	–20.. 20 mA	–10.. 10mA	–5.. 5 mA	0.. 20 mA	0.. 10 mA	0.. 5 mA	0.. 2.5 mA	4.. 20 mA	2.. 10 mA	1.. 5 mA	–	–

Conversion Parameters, MasterFieldbus (S400 I/O)

Voltage	0.. 10 V	2.. 10 V
Current	0.. 20 mA	4.. 20 mA

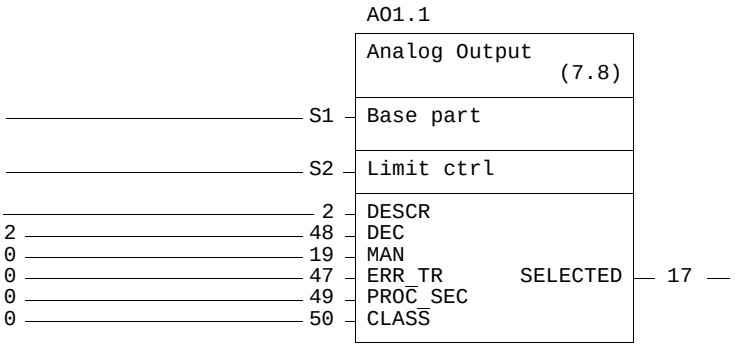
Limit control



Terminal Description, Limit control

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
33	EN_HI	user	0	B(r/w)	**EN**ables limitation of output signal to **HI**gh limit.	–
45	HI_LIM	user	100.0	R(r/w)	**HI**gh **LIM**it for output signal in engineering unit.	–
34	EN_LO	user	0	B(r/w)	**EN**ables limitation of output signal to **LO**w limit.	–
46	LO_LIM	user	–100.0	R(r/w)	**LO**w **LIM**it for output signal in engineering unit.	–
20	VALUE=HI	system	–	B(r/w)	Flag indicating that the output **VALUE** has been limited to **HI**gh limit.	–
23	VALUE=LO	system	–	B(r/w)	Flag indicating that the output **VALUE** has been limited to **LO**w limit.	–

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Maximum 20 characters. You may enter any information regarding the signal.
48	DEC	user	2	–	The number of **DEC**imals to be presented by Operator Station.	0 - 6 decimals.
19	MAN	dialog	0	B(r/w)	Flag indicating that **MAN**ual control by Operator Station operator has been selected.	0=Controlled and updated by PC program.
47	ERR_TR	user	0	–	**ERR**or **TR**eatment.	Not used.
49	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the object handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
50	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
17	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–

Function

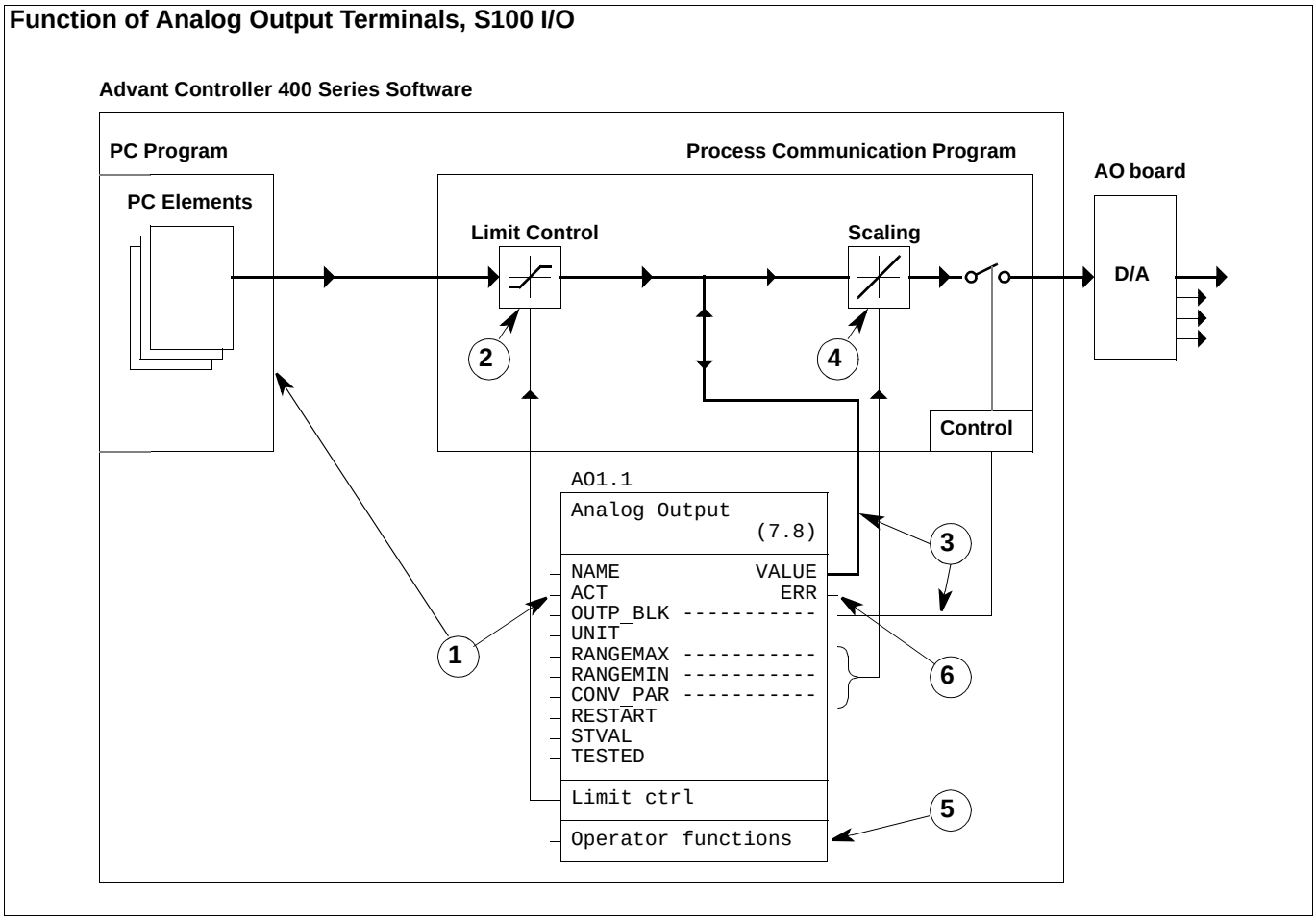
The Analog Output data base element defines a standard analog output signal. With the element you control the signal processing executed by the process communication program. You can also define the Interface to the Advant Station 500 Series Operator Station system.

The signal processing includes:

1. Update request
2. Limit Control
3. Update of data base VALUE
4. Scaling
5. Operator Station functions
6. Error handling.

The figure below illustrates this process.

Function of Analog Output Terminals, S100 I/O



Further information for applications of S400 I/O via ABB MasterFieldbus can be found in ”Function (notes on S400 I/O)” below.

1. Update request

Update is requested by the PC program connected to the output, by other programs, or from the Advant Station 500 Series Operator Station terminal.

To disable the signal completely, you set ACTivated to 0.

If update requests are received from different sources, they will all be handled, in the sequence received, but only the last one executed in each PC module.

Do not use the same output more than once in your PC programs unless you make sure that the program, control module or block module is OFF for all but one connection, or that they are located in different steps of a sequence. A reset of such a group of outputs will result in one update only.

2. Limit Control

Limit Control can be enabled by setting EN_HI or EN_LO and desired HI_LIM or LO_LIM in engineering units.

When input value is above HI_LIM or below LO_LIM the VALUE and the output signal is limited and VALUE_HI or VALUE_LO is set. The main use is to set a suitable maximum for a process function, as a convenient alternative to hardware limitation.

3. Update of data base VALUE

After limit control the signal is stored in terminal VALUE. In the element, the signal is available for connection to PC programs and for monitoring.

If you set OUTP_BLK, only VALUE is updated, not the physical output. This enables the program to be run without affecting the process.

4. Scaling

All values are used in the system as engineering units.

You enter scaling in two steps:

1. Engineering unit

   With RANGEMAX and RANGEMIN you determine the scaling of engineering units to output range. The values to be entered are those corresponding to the nominal values in the CONV_PAR.

   You may enter the name of the unit in UNIT, for documentation and display purposes.

2. Nominal output range

   With CONV_PAR you select output range and type: Bipolar, Unipolar or floating zero, using nominal limits for the physical signal, expressed in volts or mA. See the table for CONV_PAR for AO.

NOTE 1

Floating zero” ranges (like 4..20 mA) and unipolar/bipolar ranges is a software function selected by CONV_PAR. The actual gain (physical range) is a hardware function that must also be selected on the output board. See the manuals *Advant Controller 410 User’s Guide* and *Advant Controller 450 User’s Guide.*

NOTE 2

The current (mA) vs. voltage is selected when connecting to the connection unit. See the manuals *Advant Controller 410 User’s Guide* and *Advant Controller 450 User’s Guide*.

5. Operator Station functions

If Operator Station is included in your system, please refer to the manual *Advant Station 500 Series Basic Functions User's Guide*.

6. Error handling

The control function for an Analog Output indicates errors via the ERR terminal. ERR is set for all signals of an AO board, AX Redundant or AX unit element when the local or remote board function is defined as non-functional. Missing or incorrectly strapped hardware are typical errors as are errors in software or data base elements. For AX units it is possible that the error is in the bus communication (ABB MasterFieldbus).

ERR is set in the signal element if the AO board is not implemented.

The LED on the board front shows steady light if ERR is set (provided that the CPU has access to the board).

ERR is reset within 10 seconds of replacement of the non-functional hardware unit.

Signal Ranges for Each AO Board

CONV_PARAM for AO

Available for Signal range	AO board					
	DSAO 110	DSAO 120	DSAO 130	DSAX 452	DSAO 120A	DSAO 130A
–10..10 V	X	X			X	
–5..5 V	(X)					
–2.5..2.5 V	(X)					
–1.25..1.25 V	(X)					
0..10 V	X	X	X	X	X	
0..5 V	(X)					
0..2.5 V	(X)					
0.25..1.25 V	(X)					
2..10 V	X	X	X	X	X	
1..5 V	(X)					
0.5..2.5 V	(X)					
0.25..1.25 V	(X)					
–20..20 mA	X	X			X	
–10..10 mA	X					
–5..5 mA	(X)					
0..20 mA		X	X	X	X	X
0..10 mA	X	X				
0..5 mA	(X)					

CONV_PARAM for AO (Continued)

Available for Signal range	AO board					
	DSAO 110	**DSAO 120**	**DSAO 130**	**DSAX 452**	**DSAO 120A**	**DSAO 130A**
4..20 mA	X	X	X	X	X	X
2..10 mA	X	X				
1..5 V	(X)					

Range is entered exactly as given above (upper case not significant).

Ranges marked as ”X” are available by strapping and connection to the voltage or current terminal on the connection unit.

Ranges marked as ”(X)” are available by strapping and adjustment of one potentiometer per channel: R136, R236, R336 resp. R436.

Range example:

If the motor speed 400 rpm is to be represented as 20 mA and 0 rpm as 4 mA set:

CONV_PAR = 4..20 mA

UNIT = rpm

RANGE MIN = 0

RANGE MAX = 400

Optionally, set

EN_LO = 1

LO_LIM = 0

EN_HI = 1

HI_LIM = 400

If limits are not set, output of negative values, represented as 0-4 mA or even negative signal, will be possible.

Update of Values at System Init

The value to be used at system init is determined by the RESTART terminal. The value retained in the VALUE terminal since the last execution is used if RESTART=VALUE.

The VALUE terminal is updated with the value of STVAL if RESTART=STVAL and the signal is simultaneously put out on hardware.

Function (Notes on S400 I/O)

Output of analog signals is handled by an AX unit connected to a Advant Controller 400 Series via MasterFieldbus.

An AX unit's software configuration is determined through an AX unit data base element in Advant Controller 400 Series.

Such an element is comparable to an AO board element for an analog output unit located in the Advant Controller 400 Series framework.

All handling of the individual signal, and it's Analog Output element is the same regardless of whether local or S400 I/O is used. See below for a minor difference.

Communication error function

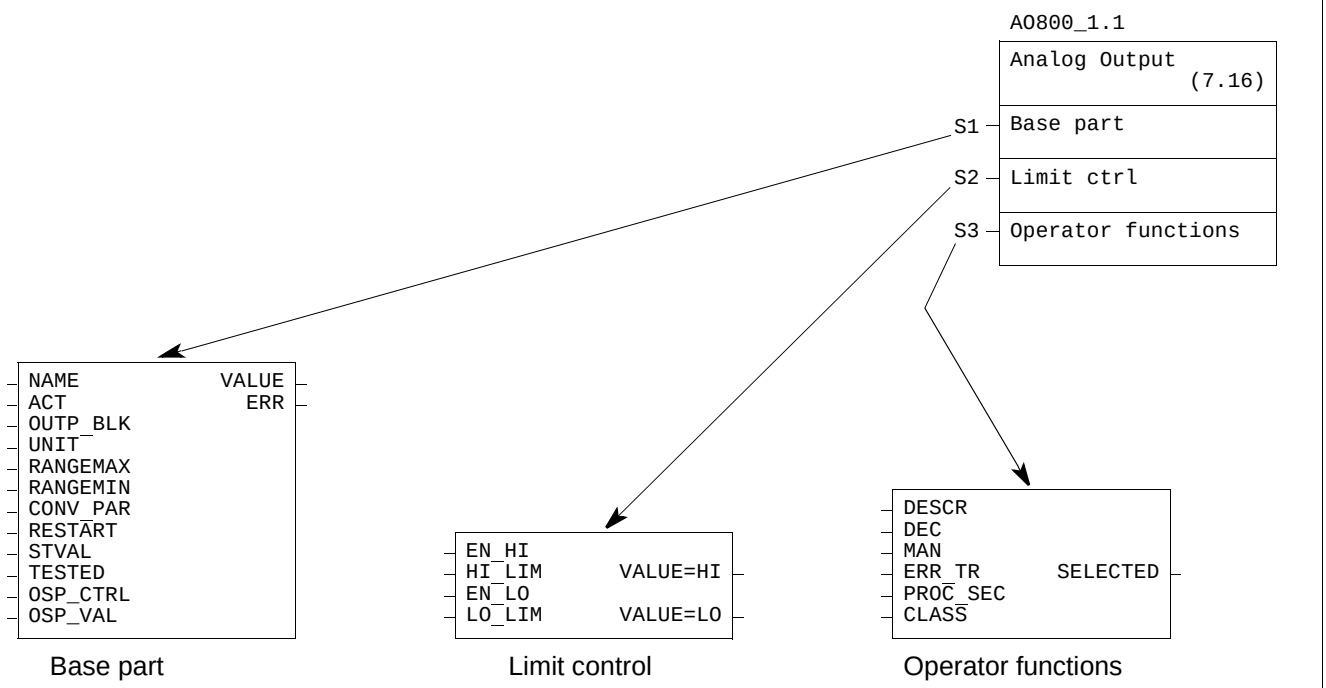
The scaling function has been moved to AX units. The AX units also contain the terminals RESTART and STVAL.
These terminals are used to determine the output value if the unit should not be updated within 0.2 seconds. This can occur if the communication is broken.

Analog Output AOS810, AOS820, AOS89x

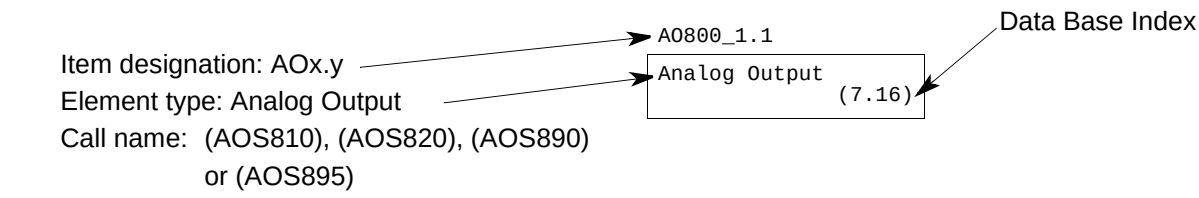
Summary

The Analog Output signal data base element is subordinate to the AO module data base element specifying an AO810, AO820, AO890 or AO895 hardware module.

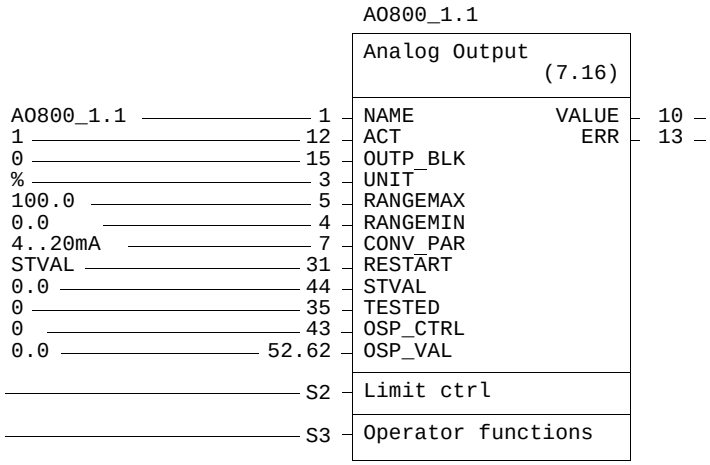
Overview



Head



Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AO800_x.y	–	Each Analog Output signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
12	ACT	user	1	B(r)	1=the signal is **ACT**ive 0=the signal is spare	–
15	OUTP_BLK	dialog	0	B(r/w)	1=board **OUTP**ut is **BL**oc**K**ed.	VALUE will still be updated.
3	UNIT	user	%	–	The signal **UNIT** in engineering unit. Empty string is entered as a dot (.).	Maximum 6 characters shown in Operator Station and data base element.
5	RANGEMAX	user	100.0	R(r)	**RANGE MAX**imum input for VALUE in engineering unit.	Derives scaling.
4	RANGEMIN	user	0.0	R(r)	**RANGE MIN**imum input for VALUE in engineering unit.	Derives scaling.
7	CONV_PAR	user	4..20mA	–	**CONV**ersion **PAR**ameter. Default value for the I/O signal elements: **For AO810, AO890/AO895:** 0..20mA, 4..20mA **For AO820:** –20..20mA, 0..20mA, 4..20mA, -10..10V, 0..10V, 2..10V	–

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
31	RESTART	user	STVAL	B(r/w)	**RESTART** selects output value at system restart. STVAL=restart value defined by terminal STVAL; VALUE=the last value is selected as restart value.	–
44	STVAL	user	0.0	R(r/w)	**ST**art **VAL**ue for output.	–
35	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
43	OSP_CTRL	user	0	B(r/w)	**O**utputs **S**et as **P**redetermined: 0=keep current value 1=set to OSP_VAL	–
52.62	OSP_VAL	user	0.0	R(r/w)	**OSP VAL**ue to set if OSP_CTRL is set to 1.	–
10	VALUE	system, user	–	R(r/w)	Output signal **VALUE** in engineering unit.	–
13	ERR	system	–	B(r/w)	**ERR**or.	–

Signal Ranges

Conversion Parameter

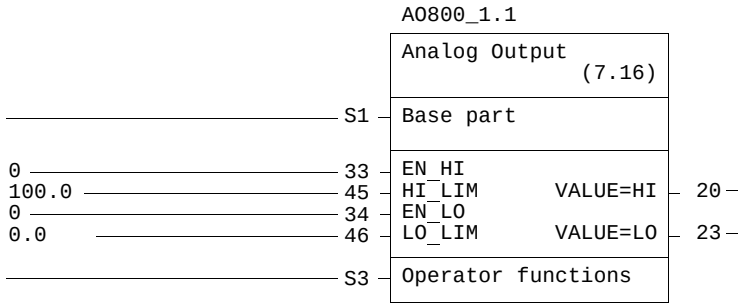
AO810/
AO890/
AO895

Current	0..20mA	4..20mA

AO820

Voltage	–10..10V	0..10V	2..10V
Current	–20..20mA	0..20mA	4..20mA

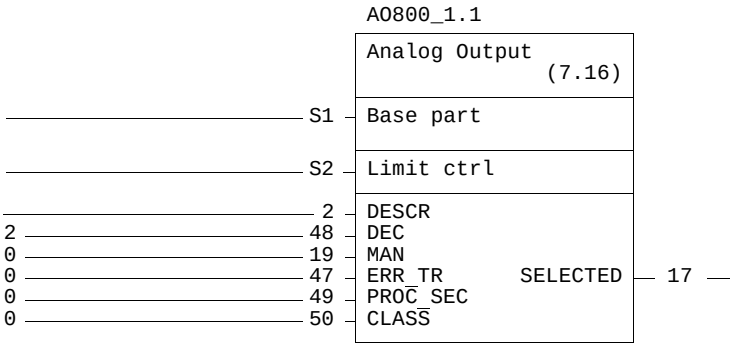
Limit control



Terminal Description, Limit control

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
33	EN_HI	user	0	B(r/w)	**EN**ables limitation of output signal to **HI**gh limit.	–
45	HI_LIM	user	100.0	R(r/w)	**HI**gh **LIM**it for output signal in engineering unit.	–
34	EN_LO	user	0	B(r/w)	**EN**ables limitation of output signal to **LO**w limit.	–
46	LO_LIM	user	0.0	R(r/w)	**LO**w **LIM**it for output signal in engineering unit.	–
20	VALUE=HI	system	–	B(r/w)	Flag indicating that the output **VALUE** has been limited to **HI**gh limit.	–
23	VALUE=LO	system	–	B(r/w)	Flag indicating that the output **VALUE** has been limited to **LO**w limit.	–

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Maximum 20 characters. You may enter any information regarding the signal.
48	DEC	user	2	–	The number of **DEC**imals to be presented by Operator Station.	0 - 6 decimals.
19	MAN	dialog	0	B(r/w)	Flag indicating that **MAN**ual control by Operator Station operator has been selected.	0=Controlled and updated by PC program.
47	ERR_TR	user	0	–	**ERR**or **TR**eatment.	Not used.
49	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the object handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
50	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
17	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–

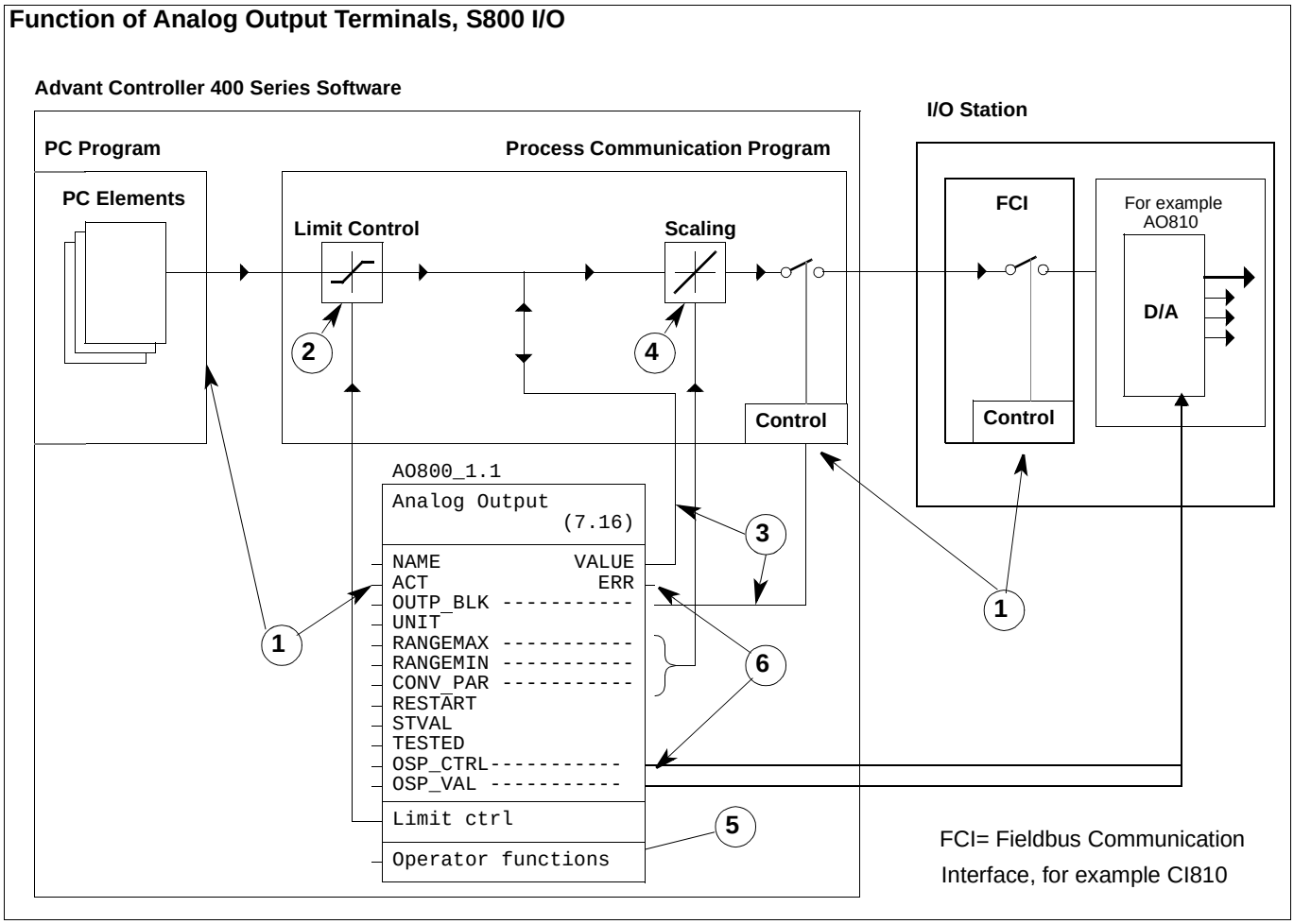
Function

The Analog Output data base element defines a standard analog output signal. With the element you control the signal processing executed by the process communication program. You can also define the Interface to the Advant Station 500 Series Operator Station system.

The signal processing includes:

1. Update request
2. Limit Control
3. Update of data base VALUE
4. Scaling
5. Operator Station functions
6. Error handling.

The figure below illustrates this process.



1. Update request

Update is requested by the PC program connected to the output, by other programs, or from the Advant Station 500 Series Operator Station terminal.

The mirroring of the output data via Advant Fieldbus 100 does influence the “freshness” of the data to be received by the AO module. The Advant Fieldbus 100 scan time (OUTSCANT) is set on the AO module element and the cycle time is common for all channels on the AO module.

To disable the signal completely, you set ACTivated to 0.

If update requests are received from different sources, they will all be handled, in the sequence received, but only the last one executed in each PC module.

Do not use the same output more than once in your PC programs unless you make sure that the program, control module or block module is OFF for all but one connection, or that they are located in different steps of a sequence. A reset of such a group of outputs will result in one update only.

2. Limit Control

Limit Control can be enabled by setting EN_HI or EN_LO and desired HI_LIM or LO_LIM in engineering units.

When input value is above HI_LIM or below LO_LIM the VALUE and the output signal is limited and VALUE_HI or VALUE_LO is set. The main use is to set a suitable maximum for a process function, as a convenient alternative to hardware limitation.

3. Update of data base VALUE

After limit control the signal is stored in terminal VALUE. In the element, the signal is available for connection to PC programs and for monitoring.

If you set OUTPBLK, only VALUE is updated, not the physical output. This enables the program to be run without affecting the process.

4. Scaling

All values are used in the system as engineering units.

You enter scaling in two steps:

1. Engineering unit

   With RANGEMAX and RANGEMIN you determine the scaling of engineering units to output range. The values to be entered are those corresponding to the nominal values in the CONV_PAR.

   You may enter the name of the unit in UNIT, for documentation and display purposes.

2. Nominal output range

   With CONV_PAR you select output range: Unipolar, Bipolar(AO820) or floating zero, using nominal limits for the physical signal, expressed in mA. See the table for CONV_PAR for AO810/AO820/AO890/AO895.

NOTE

“Floating zero” ranges (like 4..20 mA) is a software function selected by CONV_PAR.

Range example:

If the motor speed 400 rpm is to be represented as 20 mA and 0 rpm as 4 mA set:

CONV_PAR = 4..20 mA

UNIT = rpm

RANGEMIN = 0

RANGEMAX = 400

To avoid negative values and signals represented as 0-4mA, set:

EN_LO = 1

LO_LIM = 0

EN_HI = 1

HI_LIM = 400

5. Operator Station functions

If Operator Station is included in your system, please refer to the manual *Advant Station 500 Series Basic Functions User's Guide*.

6. Error handling

The control function for an Analog Output indicates errors via the ERR terminal. ERR is set for all signals of an AO module when the module function is defined as non-functional. Missing or incorrect hardware, wrong module type, fieldbus communication errors, error in output power supply, error in hardware output signal, errors in software or data base elements.

When the AO810/ AO820/ AO890/ AO895 loses communication with the Fieldbus Communication Interface module (for example CI810) or the AC 400 Series Controller the module will enter the OSP (Outputs Set as Predetermined) state. In the OSP state all channels will output a value according to the configuration on the OSP_CTRL and OSP_VAL terminals.

ERR is set in the signal element if the AO module is not implemented.

The red F (Fault) LED on the module front shows steady light if ERR is set.

ERR is reset within 10 seconds of replacement of the non-functional hardware unit.

Update of Values at System Init

The value to be used at system init is determined by the RESTART terminal. The value retained in the VALUE terminal since the last execution is used if RESTART=VALUE.

The VALUE terminal is updated with the value of STVAL if RESTART=STVAL and the signal is simultaneously put out on hardware.

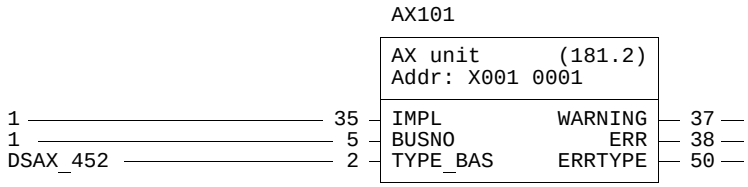
AX unit AX

Summary

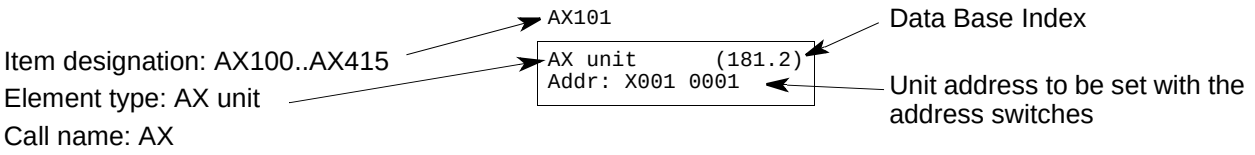
The AX unit data base element holds the data needed to define an analog S400 I/O unit connected to MasterFieldbus.

The element is superior to the Analog Input and Analog Output data base elements for the signals of the unit.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
35	IMPL	user	1	B(r)	0=the board is spare 1=the board is **IMPL**emented	–
5	BUSNO	user	*	I(r/w)	The **N**umber of the **BUS** to which the unit is connected.	See ”BUSNO”.
2	TYPE_BAS	user	DSAX_452	–	Board **TYPE** of **BAS**ic unit: DSAX_452.	–
37	WARNING	system	–	B(r)	**WARNING**. Fault, not causing stopped execution.	–
38	ERR	system	–	B(r)	**ERR**or flag indicating error, stopping execution.	–
50	ERRTYPE	system	–	I(r/w)	**ERR**or **TYPE**.	See the table for Error Types.

Error Types

Flag E or W indicates whether the element outputs ERR or WARNING are set.

Flag	ERRTYPE	Error
	Not initiated	Illegal BUSNO, IMPL=0 at system init or system not started.
E	Bus controller error	Bus controller board (CI570) is faulty or missing.
E	Communication error	Communication faulty, no reply from unit.
E	TYPE_BAS mismatch	The unit type does not agree with TYPE_BAS.
W	Hardware error	Reference channel error
E	Other error	May be set temporarily during restart.
W	Transducer power	Transducer power of base unit fails (fuse?).
	Error Channel A	Error on redundant channel A (modem, cable?)
	Error Channel B	Error on redundant channel B (modem, cable?)
	OK	No error.

The most significant error (uppermost text in table) is given if multiple error occurs.

BUSNO – Bus Number

With this terminal you select the number of the bus that the AX unit is to be connected to.

The lowest bus number with less than 16 units is given as the default BUSNO value.

BUSNO can be changed if the system is in configuration mode.

BUSNO is included as the first digit in the Item designation. The full unit address to be set on the S400 I/O unit is shown in the element head.

Item designation: AXabb — a = bus

Address in binary: xaaa bbbb — b = node on bus
x = hi speed/low speed

Example:

Item designation: AX307

BUSNO: 3

Node on bus: 7

Unit address: x011 0111

Function

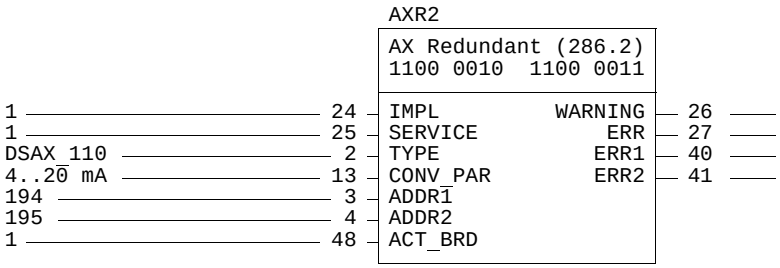
More information is to be found in the manual *S400 I/O User's Guide*.

AX Redundant AXR

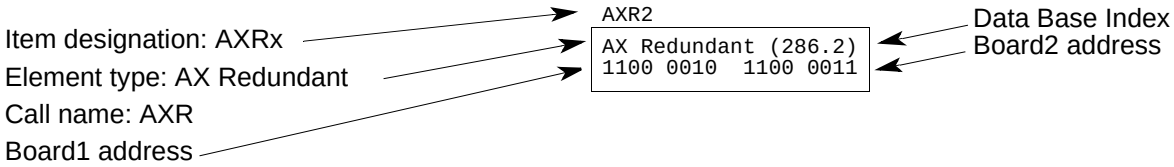
Summary

The AX Redundant data base element covers a pair of equal boards. A board in such a pair has either analog input channels or both analog input and output channels. The AX Redundant data base element has a terminal stating which board is on duty. Further it has terminals specifying board failure. If the board on duty fails the other backup one takes over. The AX Redundant data base element has subordinated channel elements with Item designation AXRx.y - of the type analog input and analog output dependent upon board type.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
24	IMPL	user	1	–	0=the board pair is spare 1=the board pair is **IMPL**emented	–
25	SERVICE	dialog	1	–	The in-**SERVICE** terminal - shows whether the board pair is in service or has been taken out of service.	–
2	TYPE	user	DSAX_110	–	Possibilities: DSAX_110 (8 AI+8 AO) and DSAI_133 (32 AI).	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
13	CONV_PAR	user	4..20mA	–	**CONV**ersion **PAR**ameter. Normal input signal range used as default value for subordinated input channel elements.	See the table for Signal ranges.
3	ADDR1	user	*	–	**ADDR**ess of board no **1**.	See “ADDRx – Address of Board No x”.
4	ADDR2	user	*	–	**ADDR**ess of board no **2**.	See “ADDRx – Address of Board No x”.
48	ACT_BRD	dialog	1	B(r)	**ACT**ive **B**oa**RD**. 1=board 1 is active 2=board 2 is active	–
26	WARNING	system	–	B(r)	Not used.	–
27	ERR	system	–	B(r)	**ERR**or is set only when both boards fails.	–
41	ERR1	system	–	B(r)	**ERR**or flag for board **1**. Set to 1 when board 1 fails.	–
42	ERR2	system	–	B(r)	**ERR**or flag for board **2**. Set to 1 when board 2 fails.	–

Function

The AX Redundant (board) data base element covers a pair of equal boards. A board in such a pair has either analog input channels or both analog input and output channels. The pair of boards are connected to one common connection unit.
The process signal lines shall be connected to this common connection unit.

Board 1 is selected to be on duty during start up of a redundant board pair, causing ACT_BRD=1. A function check is executing in parallel for both boards.

This board x on duty term means:

- Input signal:

  The value of board x is used.

- Output signal:

  50% comes from board x and 50% from the other board, if the other board is free from error, otherwise 100% comes from board x.

If the self test for board 1 detects an error, this board is assigned error indication and board 2 is selected to be on duty. This transition takes place during the same scan period as the error is detected.

When board 1 has been exchanged, the new correct unit is started up and becomes backup. If the new correct board 1 is preferred to be the one on duty, board 2 can be pulled out, a manual Operator Station change-over can be made or the value of ACT_BRD can be changed.

The AX redundant data base element has subordinated channel elements. A subordinated analog input channel element has the call name AIXRS and the item designation AXRx.y where x = board number and y = signal number. A subordinated analog output channel element has the call name AOXRS and the item designation AXRx.z where z = signal number. Otherwise these subordinated elements correspond to ordinary analog input element AIS and to ordinary analog output element AOS respectively.

Use the entry "Number of REDUNDANT/OBJECT_BOARDS" in DIMDB to dimension for the AXR element type.

You can use the SERVICE terminal to disable, and later enable the board. This saves some but not all Central unit load. This function will be used if a board must be unplugged during operation. If Advant Station 500 Series Operator Station is included in your system - see the Advant Station 500 Series Operator Station manuals.

Signal Ranges

Conversion Parameters, DSAX 110 Input channels

Voltage	0.. 10 V	0.. 5 V	2.. 10 V	1.. 5 V
Current	0.. 20 mA	4.. 20 mA	–	–

See the AI board section for corresponding DSAI_133 board data.

Secure correspondence between the CONV_PAR value and current/voltage strapping at the assigned connection unit.

ADDRx – Address of Board No x

Check manually if a default address value will cause any conflict with other boards, because none automatic check of this is performed. Default values are calculated as far as there is space enough within the address range (192-239) for OTHER boards, otherwise a zero value is presented. The ADDR1 is calculated using the formula:

190 + rec_no×2 (where rec_no is the record number in the data base for this element).

The ADDR2 is calculated using the formula:

191+rec_no×2

In case of a zero default address value - use an unoccupied address in the space among AI, AO, DI and DO boards, for example address 32..191.

Enter the address as a decimal number, which is then converted to binary format and displayed in the element head.

It is possible to only have one board installed, then the ADDR2 terminal shall be set to 0. It is not allowed to set a zero value on ADDR1 and an address in ADDR2.

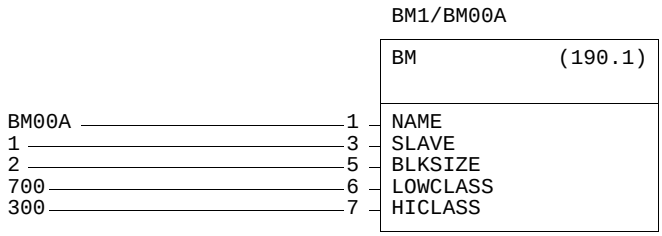
BM BM

Summary

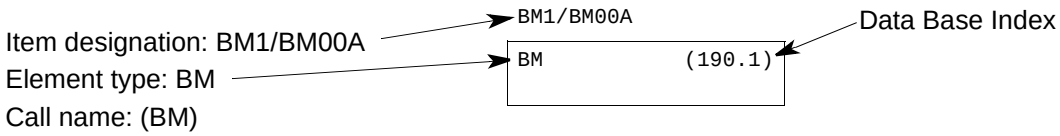
The BM data base element contains a number of terminals that describes the Buffer Manager.

The values in the BM element may only be read.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	system	–	A6(r)	**NAME** of element. BM00A..BM00I.	–
3	SLAVE	system	–	I(r)	The **SLAVE** terminal indicates on which slave processor the buffer manager is resident.	–
5	BLKSIZE	system	2	I(r)	The **BL**oc**K SIZE** terminal identifies the block size within the buffer pool.	1 = 64 bytes/block 2 = 128 bytes/block 3 = 256 bytes/block 4 = 512 bytes/block MasterBus 300 requires >64 bytes/block.

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
6	LOWCLASS	system	700	I(r)	The **LOW**est **CLASS** terminal defines the relative number of blocks within the lowest buffer class within the pool. This class has a class number of zero.	Possible values 0.. 1024.
7	HICLASS	system	300	I(r)	The **HI**ghest **CLASS** terminal defines the relative number of blocks in the highest buffer class in the pool. It also defines the maximum number of receive buffers in the data link receive queue. Number of receive buffers are calculated as HICLASS/7.	Possible values 0.. 1024.

Predefined Board Identities

Each DSCS 140 communication board is connected to a data base element via its strap address.

Data Base index LF.LR	Item Designation	Name	SLAVE
190.1	BM1	BM00A	1
190.2	BM2	BM00B	2
190.3	BM3	BM00C	3
190.4	BM4	BM00D	4
190.5	BM5	BM00E	5
190.6	BM6	BM00F	6
190.7	BM7	BM00G	7
190.8	BM8	BM00H	8
190.9	BM9	BM00I	9

Function

The MasterNet Buffer Manager administrates the sharing of the data storage in the communication buffer pool.

The basic element of data storage is a buffer list. A buffer list consists of one or more buffer identifiers (bids). The bid is the control block of a buffer. The buffer may contain up to eight chained blocks of physical memory of a specified class and priority.

System Init

You can start communication in four different ways:

1. Insert a correctly strapped CS513 module in Advant Controller 410, SC 510 or SC 520.
2. Leave the configuration mode.
3. Activate the INIT switch on the host processor front panel.
4. Give the ECONFIG or RECONFIG command.

If you leave the configuration mode, enter the Advant Station 100ES Series command DICONFIG or activate the INIT switch on the host processor, the ABB Master system, including all its communication, is restarted.

NOTE

The first CS513 you insert baptizes the station with a node number. If an erroneous node number is introduced by mistake, cold start the station via the switch on the host processor or give the RECONFIG command before a new node number is accepted

When communication restarts, a cold start-up is performed, i.e. connections are reestablished. Communication restarts within approximately 20 seconds.

Verifying MasterBus 300

LED indications on CS513

Name	Defining	LED color
F	Fault	Red
R	Run	Green
TX/LAN	Transmit to LAN	Yellow
RX	Receive from LAN	Yellow

LED indications on SC 5X0

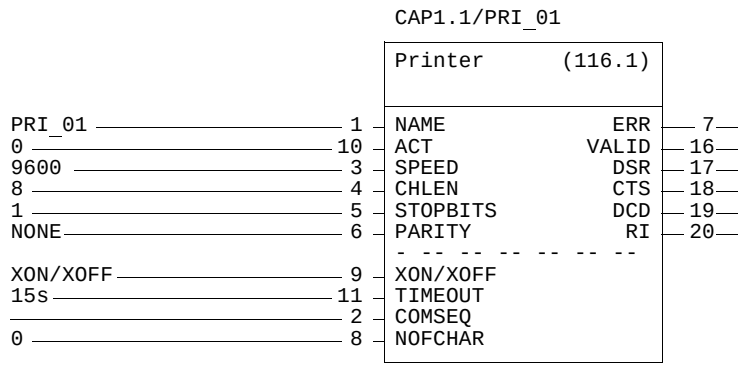
Name	Defining	LED color
F	Fault	Red
RUN	Run	Green

Printer CAPPRI

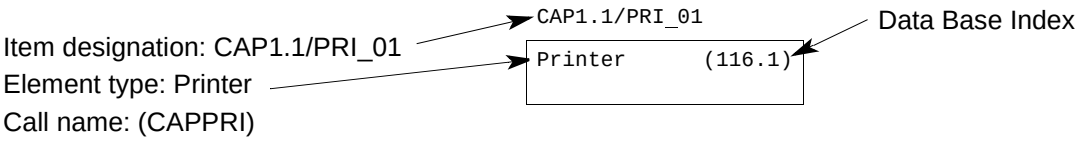
Summary

The data values of the Printer data base element defines the parameters for a printer output. With the element you set up the printer handler to fit the printer.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	predef	PRI_01	–	**NAME** of element.	Cannot be changed.
10	ACT	user	0	B(r)	1=the element is **ACT**ive 0=the element is spare	–
3	SPEED	user	9600	I(r)	Communication **SPEED**. 110, 300, 600, 1200, 2400, 4800, 9600 or 19200 bits/sec.	Baudrate.

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
4	CHLEN	user	8	I(r)	**CH**aracter **LEN**gth. Number of bits to form an ASCII character: 5, 6, 7 or 8.	Word length.
5	STOPBITS	user	1	I(r)	Number of **STOP BITS** to terminate the serial character. 1, 1.5 or 2.	–
6	PARITY	user	NONE	I(r)	Mode of **PARITY** check: none, odd, even, space, or mark.	Meaning of last bit before stop bit.
9	XON/XOFF	user	XON/ XOFF	B(r)	Mode of transmission control: 0=**XON/XOFF** 1=OFF	–
11	TIMEOUT	user	15s	IL(r)	**TIMEOUT**. Time to wait for printer before signalling ”Printer down”.	0=infinite time. Number of seconds max. 2147483647
2	COMSEQ	user	–	–	**COM**mand **SEQ**uence of characters to initiate a printer.	Hexadecimal representation with max. 7 characters.
8	NOFCHAR	user	0	I(r)	**N**umber **OF CHAR**acters transmitted between each check for XOFF or ”Busy”.	NOFCHAR=0 means ”One full block”.
7	ERR	system	–	I(r/w)	System **ERR**or code.	–1=initial value 0= transmission is OK 1=receiving unit not ready 2=element not activated 11=interface board has not been properly initialized 21=bus error, probably in interface board access 22=system error in the data base
16	VALID	system	0	–	Modem signal **VALID.**	–
17	DSR	system	0	–	**D**ata **S**et **R**eady.	–
18	CTS	system	0	–	**C**lear **T**o **S**end.	–
19	DCD	system	0	–	**D**ata **C**arrier **D**etect.	–
20	RI	system	0	–	**R**ing **I**ndicator.	–

Function Hardware

Hardware for printer

DB element	Function	Hardware in AC 450	Hardware in AC 410
PRI_01	Printer	CI531	PM150, connector COM2

In Advant Controller 450, you must also configure the data base element CI531! (In Advant Controller 410, it is not necessary to configure the data base element PM150).

The connector of CI531 and PM150 has the following pins:

DB9 male		Description	DB9 male		Description
1	DCD	Data Carrier Detect	6	DSR	Data Set Ready
2	RD	Receive Data	7	RTS	Request To Send
3	TD	Transmit Data	8	CTS	Clear To Send
4	DTR	Data Terminal Ready	9	RI	Ring Indicator
5	SG	Signal Ground	–	–	–

Modem signals

NOTE In Advant Controller 410, data base element PRI_01 does not display the modem signals!

VALID Modem signals are valid.

DSR, **CTS**, **DCD**, **RI** Modem signals. To read the modem signals, proceed as follows:

1. Observe the data base element in AS 100 Series ES (MDB PRI_01).
2. Enter AS 100 Series ES command GVD, “Get values dynamically”.
3. Check that output VALID is 1.
4. Read modem signals DSR, CTS, DCD, RI. Typically DSR=CTS=DCD=1, RI=0.

ABB supplies cables and configuration data for ABB standard printers. For other printers the following hints are given:

- It may be possible to run printers at low speed (100 or 300 baud) without Busy/Ready signal. The Busy/Ready connection then must be strapped for Ready state.
- To connect DTR to DCD in the computer side connector is possible but not recommended. It must be combined with low baudrate and/or XON/XOFF mode. To connect DSR to DTR and RTS to CTS can usually be recommended.

Function Software

Two alternative signalling modes can be used by the printer to indicate full buffer.

1. Busy/Ready mode

XON/XOFF is set to 0 (Off). The printer uses a Busy/ Ready line in the RS 232 serial line to indicate that the printer cannot receive further data. Transmission will be delayed until the printer indicate ”Ready”.

2. XON/XOFF mode

XON/XOFF is set to X. The printer uses the transmit data line in the RS 232 serial line to send the XON (ASCII dec 1=Hex 11) and the XOFF (ASCII dec 3=Hex 13) characters to turn the transmission from the computer on and off.

NOFCHAR: The printer sends the XOFF character when there is only space left for a certain (low) number of characters in the printer buffer. This number, the ”buffer threshold”, is typically 32 or 256 characters. If the buffer threshold exceeds 256 characters, the buffer can hold a complete printer line. This means that the CPU has to check for XOFF between each line only. In this case you set NOFCHAR=0. If the buffer threshold is less (that is 32 characters), NOFCHAR should be set to a slightly less number than the threshold (that is 30).

Other Printer Settings

SPEED, CHLEN, STOPBITS and PARITY must be set to fit the printer. The system does not report parity errors, but some printers do themselves. The number of stop bits is normally 1.

TIMEOUT: If the printer does not receive characters within the TIMEOUT number of seconds a system message is given and the printer output is turned off (see ”printer restart”). The reason may be that the printer is out of paper, faulty or turned off. You may set any number of seconds exceeding the maximal time to print one line (maximal TIMEOUT 214000 sec.=59 h).

COMSEQ – Command Sequence: Printers may have software settable optional functions not accessible by switches. These can be selected by sending a command sequence to initiate the function. The command sequence entered in COMSEQ is sent to the printer each time the printer output is restarted (see ”Printer restart”). One or more of such command sequences may be entered in COMSEQ, using hexadecimal representation of the characters in the sequence.

For each such ASCII character you enter 2 hexadecimal digits. A maximum of 7 ASCII characters may be entered, separated by a space.

Example: ESC A is entered as 18 41.

Typical uses are alternate character set selection, left margin, unusual papersizes. Refer to your printer manual.

NOTE

The COMSEQ overrides switch selected settings of the same parameter, while system software may override both COMSEQ and switches.

Printer restart

The printer output is restarted with the entered values when a system init is performed on your Advant Controller 400 Series system. The printer is also restarted, including transmission of the COMSEQ characters, if you answer Y to the question ”Do you want to activate PRINT/ExCom with these parameters?”, obtained when leaving the element.

Note that even if you answer No to this question, the modified values will be used at next system init.

ABB Product printers

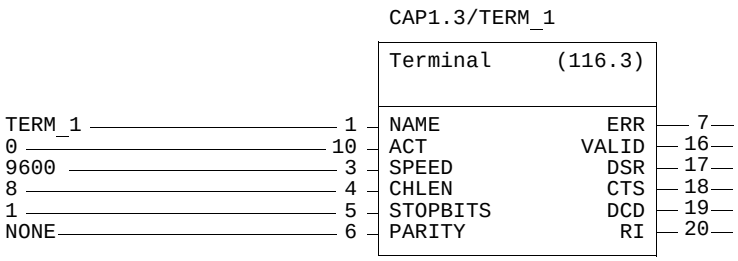
At start-up the element has settings according to the figure “Overview”. Please verify that this is the setting of your printer or change the setting of the printer or the data base element.

Terminal CAPTERM

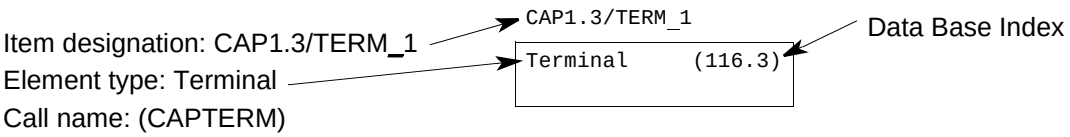
Summary

The data values of the Terminal data base element defines the parameters for a terminal (VDU) connection. With the element you set up the communication handler to fit the terminal.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	predef	TERM_1	–	**NAME** of element.	Cannot be changed.
10	ACT	user	0	B(r)	1=the element is **ACT**ive 0=the element is spare	–
3	SPEED	user	9600	I(r)	Communication **SPEED**. 110, 300, 600, 1200, 2400, 4800, 9600, or 19200 bits/sec.	Baudrate.
4	CHLEN	user	8	I(r)	**CH**aracter **LEN**gth. Number of bits to form an ASCII character (7 or 8).	–
5	STOPBITS	user	1	I(r)	Number of **STOP BITS** to terminate the serial character. 1, 1.5 or 2.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
6	PARITY	user	NONE	I(r)	Mode of **PARITY** check: none, odd, even, space, or mark.	Meaning of last bit before stop bit.
7	ERR	system	–	I(r/w)	System **ERR**or code.	–1=initial value 0= transmission is OK 1=receiving unit not ready 2=element not activated 11=interface board has not been properly initialized 21=bus error, probably in interface board access 22=system error in the data base
16	VALID	system	0	–	Modem signal **VALID.**	–
17	DSR	system	0	–	**D**ata **S**et **R**eady.	–
18	CTS	system	0	–	**C**lear **T**o **S**end.	–
19	DCD	system	0	–	**D**ata **C**arrier **D**etect.	–
20	RI	system	0	–	**R**ing **I**ndicator.	–

Function Hardware

Hardware for MasterView 320

DB element	Function	Hardware in AC 450	Hardware in AC 410
TERM_1	MV320 terminal 1	CI531	PM150, connector COM1
TERM_2	MV320 terminal 2	CI531	CI531
TERM_3	MV320 terminal 3	CI531	CI531
TERM_4	MV320 terminal 4	CI531	*Not supported*

When you use hardware CI531, you must also configure the data base element CI531! When you use hardware PM150, it is not necessary to configure the data base element PM150).

Modem signals

NOTE In Advant Controller 410, data base element TERM_1 does not display the modem signals!

VALID Modem signals are valid.

DSR, **CTS**, **DCD**, **RI** Modem signals. To read the modem signals, proceed as follows:

1. Observe the data base element in AS 100 Series ES (MDB TERM_x).
2. Enter AS 100 Series ES command GVD, “Get values dynamically”.
3. Check that output VALID is 1.
4. Read modem signals DSR, CTS, DCD, RI. Typically DSR=CTS=DCD=1, RI=0.

Function Software

Terminal settings

SPEED, CHLEN, STOPBITS and PARITY must be set to fit the terminal. The system does not report parity errors. The number of stop bits is normally 1.

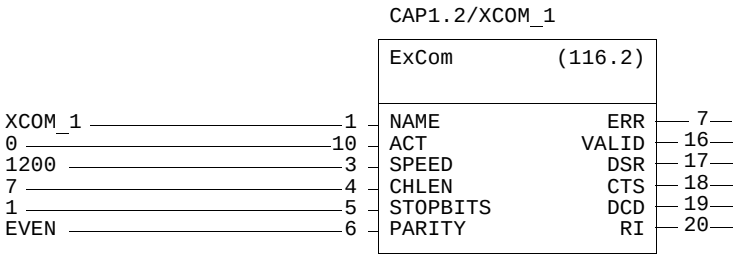
The terminal should be set up to generate XON/XOFF.

ExCom CAPXCOM

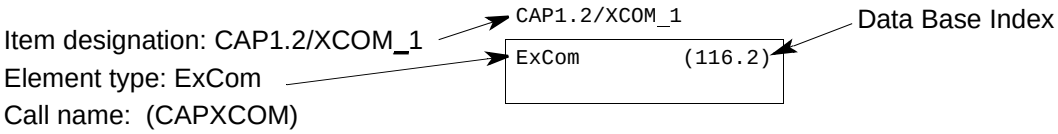
Summary

The data values of the ExCom data base element defines the parameters for a communication link to an external computer. With the element you set up the communication handler to fit the other computer.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	predef	XCOM_1	–	**NAME** of element.	Cannot be changed.
10	ACT	user	0	B(r)	1=the element is **ACT**ive 0=the element is spare	–
3	SPEED	user	1200	I(r)	Communication **SPEED**. 110, 300, 600, 1200, 2400, 4800, 9600 or 19200 bits/sec.	Baudrate.
4	CHLEN	user	7	I(r)	**CH**aracter **LEN**gth. Number of bits to form an ASCII character (7 or 8).	–
5	STOPBITS	user	1	I(r)	Number of **STOP BITS** to terminate the serial character.	–

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
6	PARITY	user	EVEN	I(r)	Mode of **PARITY** check: none, odd, even, space, or mark.	Meaning of last bit before stop bit.
7	ERR	system	–	B(r/w)	System **ERR**or code.	–1=initial value 0= transmission is OK 1=receiving unit not ready 2=element not activated 11=interface board has not been properly initialized 21=bus error, probably in interface board access 22=system error in the data base
16	VALID	system	0	–	Modem signal **VALID.**	–
17	DSR	system	0	–	**D**ata **S**et **R**eady.	–
18	CTS	system	0	–	**C**lear **T**o **S**end.	–
19	DCD	system	0	–	**D**ata **C**arrier **D**etect.	–
20	RI	system	0	–	**R**ing **I**ndicator.	–

Function

The purpose of the element is to enable any computer with an asynchronous communication link to read and write the Data Set DATa values, and read VALUE and 12 bits of status in the AI, AO, DI, DO and similar elements.

Hardware for MasterView 320

DB element	Function	Hardware in AC 450	Hardware in AC 410
XCOM_1	Excom link 1	CI531	CI531
XCOM_2	Excom link 2	CI531	CI531
XCOM_3	Excom link 3	*Not supported*	*Not supported*

NOTE You must configure the data base element CI531!

Modem Signals

VALID Modem signals are valid.

DSR, **CTS**, **DCD**, **RI** Modem signals. To read the modem signals, proceed as follows:

1. Observe the data base element in AS 100 Series ES (MDB XCOM_x).
2. Enter AS 100 Series ES command GVD, “Get values dynamically”.
3. Check that output VALID is 1.
4. Read modem signals DSR, CTS, DCD, RI. Typically DSR=CTS=DCD=1, RI=0.

Parameters

SPEED, STOPBITS and PARITY must be set to fit the communication parameters of the other computer. SPEED (baudrate) is set according to the capacity of the transmission line.

Communication Restart

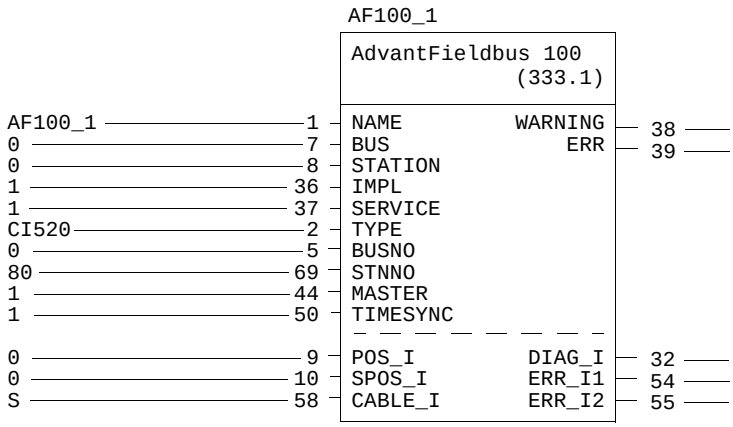
The communication is restarted with the entered values when a system init is performed in the Advant OCS with Master software. It is also restarted if you answer Y to the question ”Do you want to activate Print P/ExCom with these parameters?” obtained when leaving the data base element. Note that if you answer No to this question, the modified values will be used at next system init.

Advant Fieldbus 100 CI520

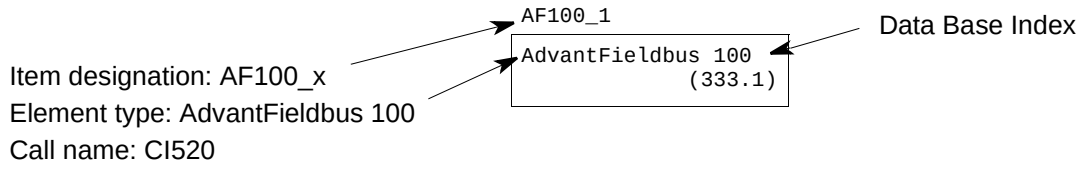
Summary

The Advant Fieldbus 100 data base element specifies an Advant Fieldbus 100 connected to an Advant Controller 400 Series. The data base element contains diagnostic information of both the fieldbus (Advant Fieldbus 100) and the CI520 communication module itself.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AF100_x	–	Unique **NAME** of the bus.	Max. 20 characters.
7	BUS	predef	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
8	STATION	predef	0	–	**STATION**. Part of Address.	–
36	IMPL	user	1	B(r)	0=the module is spare 1=the module is **IMPL**emented	–
37	SERVICE	user	1	B(r/w)	The in-**SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
2	TYPE	predef	CI520	–	**TYPE** designation of hardware module.	–
5	BUSNO	user	0	–	Unique **BUS N**umber for this fieldbus: 1 - 255.	Cannot be changed when system is in op. mode. 0 not allowed for an active bus.
69	STNNO	user	80	–	**ST**atio**N N**umber representing the Controller on the fieldbus: 1 - 80.	Cannot be changed when IMPL=1 in op. mode. 0 not allowed for an active station.
44	MASTER	user	1	–	Communication interface in 0=SLAVE mode 1=**MASTER** mode	–
50	TIMESYNC	user	1	–	Send **TIME SYNC**hronization messages.	–
9	POS_I	user	0	–	**POS_I**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
10	SPOS_I	user	0	–	**SPOS_I**. Part of Address.	
58	CABLE_I	user	S	–	**CABLE** connection: S=single, R=redundant	–
38	WARNING	system	–	B(r)	**WARNING** flag indicating non-fatal errors.	–
39	ERR	system	–	B(r)	**ERR**or flag indicating hardware or configuration error.	–
32	DIAG_I	system	–	–	CI520 module **DIAG**nostics.	–
54	ERR_I1	system	–	B(r)	**ERR**or indication for bus cables.	–
55	ERR_I2	system	–	B(r)		

Function

The Advant Fieldbus 100 data base element specifies an Advant Fieldbus 100 connected to an Advant Controller 400 Series. The data base element contains diagnostic information of both the fieldbus (Advant Fieldbus 100) and the CI520 communication module itself.

The Advant Fieldbus 100 data base element can be created in the system but can not be removed. It is however possible to disable the function of the element by setting the IMPL terminal to 0. The data base element can also be reconfigured to specify a different Advant Fieldbus 100 bus if one fieldbus is removed and another is inserted in the system.

Module Set-up Procedure

With the data base element you set up the communication module for the process communication program.

The communication module set-up procedure includes:

1. Implementation
2. Disabling
3. Parameters
4. Diagnostics.

1. Implementation

The Advant Fieldbus 100 data base communication module is configured with its parameters and started at system INIT if IMPL is set to 1. Setting IMPL to 1 in a running system means that the CI520 communication module is configured with its parameters and started. Connection to the stations on Advant Fieldbus 100 is established. Setting IMPL to 0 in a system in operational mode means that the CI520 communication module is shut down and the connection to the stations is lost.

2. Disabling

The SERVICE terminal has similar functionality as the IMPL terminal, except that it is meant to be used for temporary disabling and repairs. Reconfiguration of terminals such as POS_I and SPOS_I in a system in operational mode is thereby not allowed.

3. Parameters

The BUSNO terminal specifies a unique bus number for this specific Advant Fieldbus 100, to be used in other data base elements to specify when communicating via or if they are connected to this specific Advant Fieldbus 100. Please note that BUSNO **can not be changed** when the system is in operational mode.

The STNNO terminal specifies a unique station number for the Advant Controller 400 Series to be used on this Advant Fieldbus 100. Station number 80 is the default value and is valid as long as only one Advant Controller 400 Series exist on this bus. Only one Advant Controller 400 Series can have station number 80, the others have to change the station number. It is possible although not recommended to use different STNNO in different Advant Fieldbus 100 data base elements within one Advant Controller 400 Series.

Terminal MASTER specifies if the CI520 communication module shall be Master or Slave on the Advant Fieldbus 100. A CI520 communication module is normally a Master on the bus, and it is also the default value.

Terminal TIMESYNC specifies if the CI520 communication module shall send time synchronization messages on Advant Fieldbus 100. In most configurations this terminal shall be set to 1, and it is the default value. Please note that only one station can be responsible for sending time synchronization messages on Advant Fieldbus 100.

The CI520 communication module can be connected to single or redundant media (one or two cables). The terminal CABLE_I specifies if single or redundant media is installed for the Advant Fieldbus 100. The default is single media.

4. Diagnostics

The Advant Fieldbus 100 data base element indicates diagnostics for both the CI520 communication module and Advant Fieldbus 100. The ERR terminal indicates fatal errors and the WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. One or more diagnostics indicators may be set. A few typical errors are listed in the following table.

Advant Fieldbus 100 data base element diagnostic information

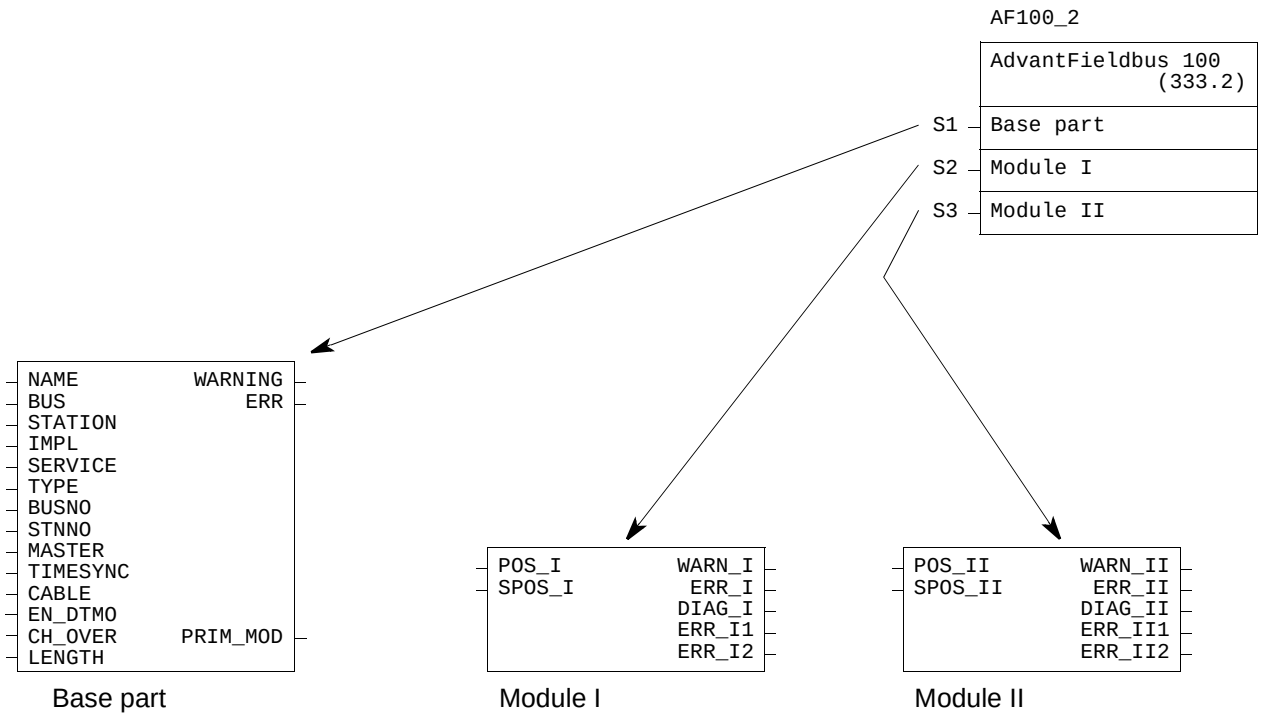
Condition	WARNING	ERR	ERR_I1	ERR_I2	DIAG_I	Action
Missing or faulty CI520	–	1	–	–	IE	Insert CI520
Redundant cable 1 bad	1	–	1	0	PE	Replace media (cable 1)
Redundant cable 2 bad	1	–	0	1	PE	Replace media (cable 2)

Advant Fieldbus 100 CI522

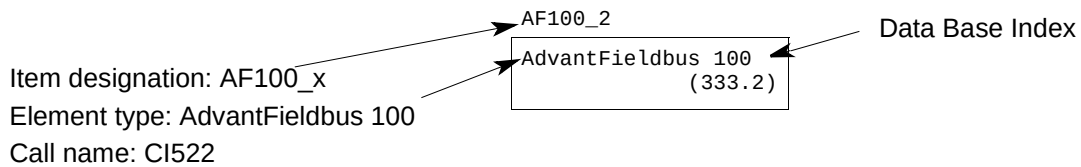
Summary

The CI522 submodule data base element specifies a communication interface that supports redundant Advant Fieldbus 100. The data base element contains diagnostic information of the physical CI522 submodule(s).

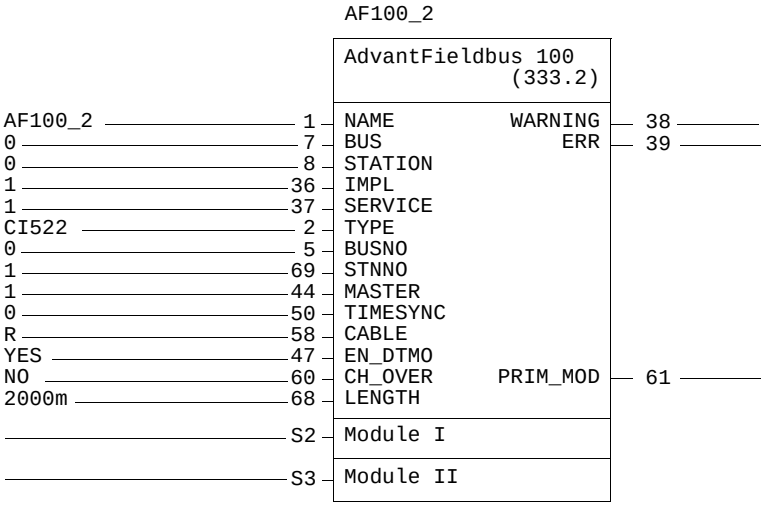
Overview



Head



Base part



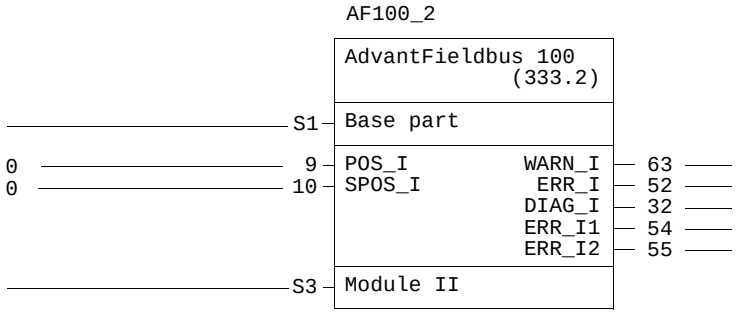
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AF100_x	–	Unique **NAME** of the bus.	Max. 20 characters.
7	BUS	predef	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
8	STATION	predef	0	–	**STATION**. Part of Address.	–
36	IMPL	user	1	B(r)	0=the module is spare 1=the module is **IMPL**emented	–
37	SERVICE	user	1	B(r/w)	The in-**SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
2	TYPE	predef	CI522	–	**TYPE** designation of hardware module.	–
5	BUSNO	user	0	–	Unique **BUS N**umber for this fieldbus: 1..255.	Cannot be changed when IMPL=1 in op. mode. 0 not allowed for an active bus.
69	STNNO	user	1	–	**ST**atio**N N**umber representing the Controller on the fieldbus: 1..80.	Cannot be changed when IMPL=1 in op. mode. 0 not allowed for an active station.

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
44	MASTER	user/ system	1	–	Communication interface in 0=SLAVE mode 1=**MASTER** mode	Cannot be changed when IMPL=1 in op. mode. Set by system when redundant submodules are used.
50	TIMESYNC	user	0	–	Send **TIME SYNC**hronization messages.	–
58	CABLE	user	R	–	**CABLE** connection: S=single R=redundant	–
47	EN_DTMO	user/ system	YES	–	**EN**able **D**ouble **T**i**M**e-**O**ut. Enables longer time-out time for cyclic data on AF 100.	Cannot be changed when IMPL=1 in op. mode. Set by system when redundant submodules are used. Shall be set when any station on the bus has communication redundancy.
60	CH_OVER	user	NO	–	**CH**ange **OVER**. YES=order a change of primary CI522 module.	Will be set to NO after the change-over. For updating the screen use GVD command.
68	LENGTH	user	2000m	–	Bus **LENGTH**. Allowed values: 2000m, 8500m, 15000m.	Cannot be changed when IMPL=1 in op. mode.
38	WARNING	system	–	B(r)	**WARNING** flag indicating non-fatal errors.	–
39	ERR	system	–	B(r)	**ERR**or flag indicating hardware or configuration error.	–
61	PRIM_MOD	system	–	–	**PRIM**ary **MOD**ule, shown as I or II.	–

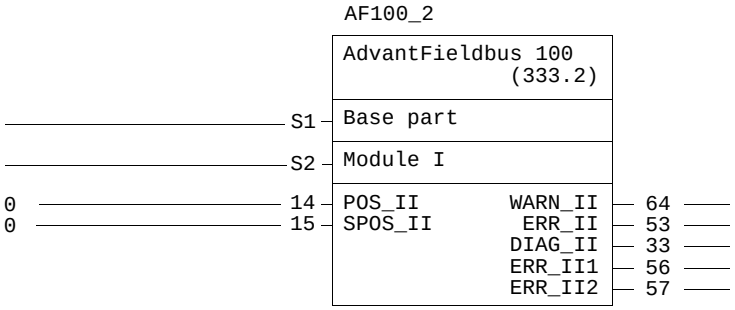
Module I



Terminal Description, Module I

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
9	POS_I	user	0	–	**POS_I**. Part of address for submodule **I**.	Start up as Primary if redundant submodules. Cannot be changed when IMPL=1 in op. mode.
10	SPOS_I	user	0	–	**SPOS_I**. Part of address for submodule **I**.	Cannot be changed when IMPL=1 in op. mode.
63	WARN_I	system	–	B(r)	**WARN**ing flag indicating non-fatal errors on submodule **I**.	–
52	ERR_I	system	–	B(r)	**ERR** flag indicating hardware or configuration error on submodule **I**.	–
32	DIAG_I	system	–	B(r)	Module **DIAG**nostics for submodule **I**.	–
54	ERR_I1	system	–	B(r)	**ERR**or indication for bus cables on submodule **I**.	–
55	ERR_I2	system	–	B(r)		–

Module II



Terminal Description, Module II

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
14	POS_II	user	0	–	**POS_II**. Part of address for submodule **II**.	If = 0, submodule II is not used and submodule I is not redundant.
15	SPOS_II	user	0	–	**SPOS_II**. Part of address for submodule **II**.	–
64	WARN_II	system	–	B(r)	**WARN**ing flag indicating non-fatal errors on submodule **II**.	–
53	ERR_II	system	–	B(r)	**ERR** flag indicating hardware or configuration error on submodule **II**.	–
33	DIAG_II	system	–	B(r)	Module **DIAG**nostics for submodule **II**.	–
56	ERR_II1	system	–	B(r)	**ERR**or indication for bus cables on submodule **II**.	–
57	ERR_II2	system	–	B(r)		–

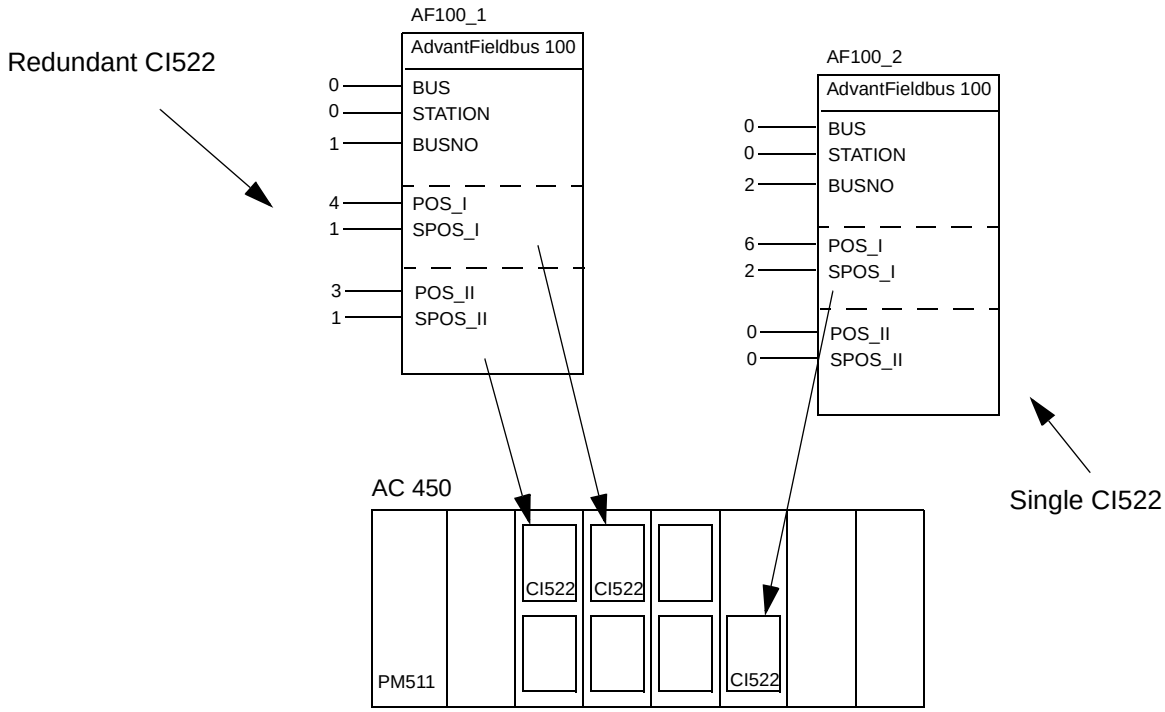
Function

The Advant Fieldbus 100 data base element specifies an Advant Fieldbus 100 connected to an Advant Controller 400 Series. The data base element contains diagnostic information of both Advant Fieldbus 100 and the CI522 communication module(s) itself.

The Advant Fieldbus 100 data base element can be created in the system but cannot be removed. It is however possible to disable the function of the element by setting terminal IMPL = 0. The data base element can also be configured to specify a different Advant Fieldbus 100 bus if one fieldbus is removed and another is inserted in the system. The CI522 communication module supports redundant Advant Fieldbus 100. The POS_I and SPOS_I terminals specify the position of the first CI522 submodule, and this position is used for single AF 100. The POS_II and SPOS_II terminals specify the position of the second

(redundant) CI522 submodule. If the second position is specified (POS_II and SPOS_II not 0) before entering operation mode or at creation time in operation mode, the redundant AF 100 is used, otherwise single AF 100 is used.

Example of Position Terminals Usage in CI522 Data Base Elements



Module Set-up Procedure

With the data base element you set up the communication module for the process communication program.

The communication module set-up procedure includes:

1. Implementation
2. Disabling
3. Parameters
4. Diagnostics.

1. Implementation

The Advant Fieldbus 100 data base communication module is configured with its parameters and started at system INIT if IMPL is set to 1. Setting IMPL to 1 in a running system means that the CI522 communication module(s) is configured with its parameters and started. Connection to the stations on Advant Fieldbus 100 is established. Setting IMPL to 0 in a system in operational mode means that the CI522 communication module(s) is shut down and the connection to the stations is lost.

2. Disabling

The SERVICE terminal is meant to be used for temporary disabling and repairs. The bus is not supervised if SERVICE=0 and thereby no system message will be generated for the bus.

3. Parameters

The BUSNO terminal specifies a unique bus number for this specific Advant Fieldbus 100, to be used in other data base elements to specify when communicating via or if they are connected to this specific Advant Fieldbus 100. Please note that BUSNO **can not be changed** when the system is in operational mode.

The STNNO terminal specifies a unique station number for the Advant Controller 400 Series to be used on this Advant Fieldbus 100. Station number 1 is the default value and is valid as long as only one Advant Controller 400 Series exist on this bus. Only one Advant Controller 400 Series can have station number 1, the others have to change the station number. It is recommended to have as low station numbers as possible if the CI522 is specified as MASTER.

NOTE

When redundant communication interfaces (CI522 and CI820) are used on the bus, at least one of the following two rules must be followed:

- The redundant CI522 pair is assigned a station number lower than five (5).

or

- Two master defined communication interfaces are assigned station numbers lower than five (5).

Terminal MASTER specifies if the CI522 communication module shall be Master or Slave on the Advant Fieldbus 100. A CI522 communication module is normally a Master on the bus, and it is also the default value.

Terminal TIMESYNC specifies if the CI522 communication module shall send time synchronization messages on Advant Fieldbus 100. The default value is 0. Please note that only one station can be responsible for sending time synchronization messages on Advant Fieldbus 100.

Terminal CH_OVER indicates that controlled change-over of the submodules should be performed if possible. The system sets this flag to NO directly after the change-over. For updating the screen use the GVD command. The actual primary CI522 is shown on the PRIM_MOD terminal. “I” is shown if the submodule configured as “Module I” is primary, and “II” is shown if the submodule configured as “Module II” is primary.

If the CI522 communication module is single, it can be connected to single or redundant media (one or two cables). Terminal CABLE specifies if single or redundant media is installed for the Advant Fieldbus 100. Default is redundant media.

The first bus administrator that takes the bus mastership will actually decide which length the bus is configured for. Every other length will be considered as wrong.

4. Diagnostics

The Advant Fieldbus 100 data base element indicates diagnostics for both the CI522 communication module(s) and Advant Fieldbus 100. The ERR terminal indicates fatal errors and the WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. In single AF 100 terminal DIAG_II is blank. One or more diagnostics indicators may be set. A list of error conditions for single AF 100 is shown in the following table.

Advant Fieldbus 100 data base element diagnostic information (single AF 100)

Condition	WARNING	ERR	DIAG_I	Action
Missing CI522	–	1	MNA	Insert CI522
Faulty CI522	–	1	ME	Replace CI522
Cable bad	–	1	FBE	Replace cable
Internal software error	–	1	IE	Toggle the IMPL flag
System error	1	0	SE	The reason for this error condition can be manifold: Disturbance, more than one Time Sync Master, stations with same station number on AF 100, to high load on CI522 etc. Refer to the system message for detailed information.
Process error	1	0	PE	The reason for this error condition can be disturbance on AF 100 or faulty CI522.
Redundant cable bad	1 (1)	0	PE	Replace cable
CI522 passive	–	–	PSV	Set IMPL flag

(1) Terminal ERR_I1 or ERR_I2 indicates which cable is bad.

A list of additional error conditions concerning redundant AF 100 can be found in the following table.

Advant Fieldbus 100 data base element diagnostic information (redundant AF 100)

Condition	WARNING	ERR	DIAG_I	DIAG_II	Action
First CI522 missing	1	–	MNA	–	Insert CI522
Second CI522 missing	1	–	–	MNA	Insert CI522
Both CI522 missing	1	–	MNA	MNA	Insert both CI522
Redundant cable bad	1	0	PE	PE	Replace cable
First modem cable bad	1	0	PE	–	Replace modem cable

Error Handling

WARN_I, **WARN_II** Shows if there is a warning (non-fatal error) on respective CI522 module. If any of the CI522 submodules has a warning (WARN_I or WARN_II is set) the summary WARNING terminal is set.

ERR_I, **ERR_II** Shows if there is an error on respective CI522 module. If any of the CI522 modules has an error (ERR_I or ERR_II is set) the summary WARNING terminal is set. If both CI522 submodules have an error the summary ERR terminal is set.

Terminals POS_II, SPOS_II, ERR_II1, and ERR_II2 have the corresponding meaning as their counterparts with "_I".

RS232 interface CI531

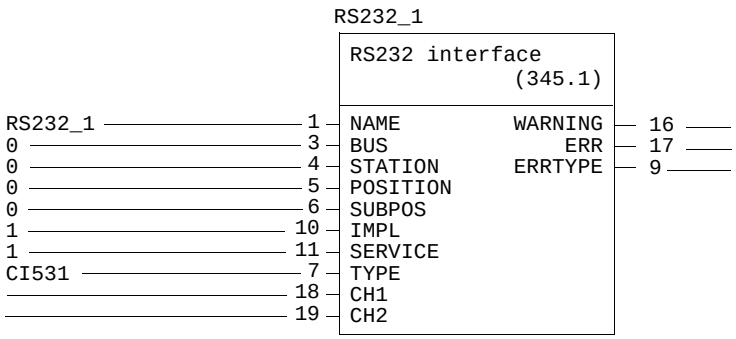
Summary

The data base element RS232 interface represents the hardware CI531. CI531 is an RS232 module with two channels.

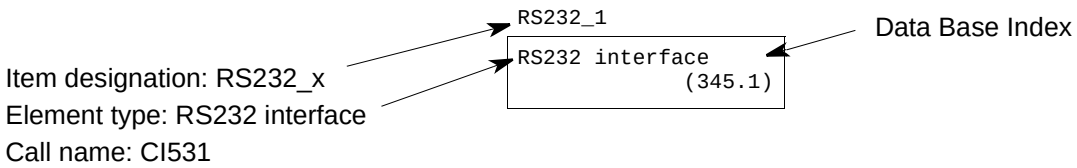
In Advant Controller 410, CI531 can be used for Excom or MasterView 320.

In Advant Controller 450, CI531 can be used for printer, Excom or MasterView 320.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	RS232_x	–	Unique **NAME** of the element.	–
3	BUS	predef	0	–	**BUS**. Part of Address.	See section Terminals (BUS,STATION, POSITION and SUBPOS) in the Introduction.
4	STATION	predef	0	–	**STATION**. Part of Address.	
5	POSITION	user	0	–	**POSITION**. Part of Address.	
6	SUBPOS	user	0	–	**SUBPOS**. Part of Address.	

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
10	IMPL	user	1	–	0=the module is spare 1=the module is **IMPL**emented	
11	SERVICE	user	1	–	The in-**SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	CI531	–	**TYPE** designation of the hardware module.	–
18	CH1	user	–	–	Data base element defining **CH**annel **1**. (1)	Possible values for CH 1 and CH2 are: AC410: XCOM_1, XCOM_2, TERM_2, TERM_3. AC450: PRI_01, XCOM_1, XCOM_2, TERM_1, TERM_2, TERM_3, TERM_4.
19	CH2	user	–	–	Data base element defining **CH**annel **2**. (1)	
16	WARNING	system	0	B(r)	**WARNING**. Not used.	–
17	ERR	system	0	B(r)	**ERR**or. Not used.	–
9	ERRTYPE	system	0	I(r)	**ERR**or **TYPE**. Not used.	–

(1) CH1 and CH2 can not be modified in operation mode when IMPL=1

Function

The main functions of the element are:

- to indicate where in the subrack the hardware CI531 is placed
- to indicate which function each of the two channels of CI531 has.

Examples:

Channel 1 is MasterView 320 terminal 3, Channel 2 is Excom link 1, or
Channel 1 is Excom link 1, Channel 2 is printer.

Normal Configuration

For configuring a printer (in Advant Controller 450 only), Excom link, or MasterView 320 terminal, proceed as follows.

1. Create the data base element CI531. It is sufficient to modify the following inputs:

   POSITION See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.

   SUBPOS See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.

   CH1 The function which uses channel 1 of the CI531.

   Examples:

CH1=PRI_01.	The printer uses channel 1. The data base element PRI_01 has communication parameters for the printer.
CH1=XCOM_2.	Excom link 2 uses channel 1. The data base element XCOM_2 has communication parameters for the Excom link.
CH1=TERM_4.	MasterView 320, terminal 4 uses channel 1. The data base element TERM_4 has communication parameters for the terminal.

   CH2 See CH1.

2. Fill out the data base elements which have the communication parameters for Channel 1 and 2, for example the PRI_01, TERM_4 or XCOM_2 elements. See description of data base elements CAPPRI, CAPTERM, CAPXCOM.

Special Configuration

SERVICE The input SERVICE means “in service”.
If you set SERVICE to 0 you stop the printer/Excom links/MasterView 320 terminals.
If you set SERVICE to 1 you start again.

You can use the SERVICE input when you exchange the CI531 hardware, however it is not necessary.

IMPL The input IMPL means implemented. The input IMPL is practically identical to SERVICE.
When IMPL= 0, you are allowed to:

- Change positions of CI531, that is, modify inputs POSITION and SUBPOS.
- Change functions (printer/Excom links/MasterView 320 terminals) which uses CI531, that is, modify inputs CH1 and CH2 also when the Controller is in operation mode.

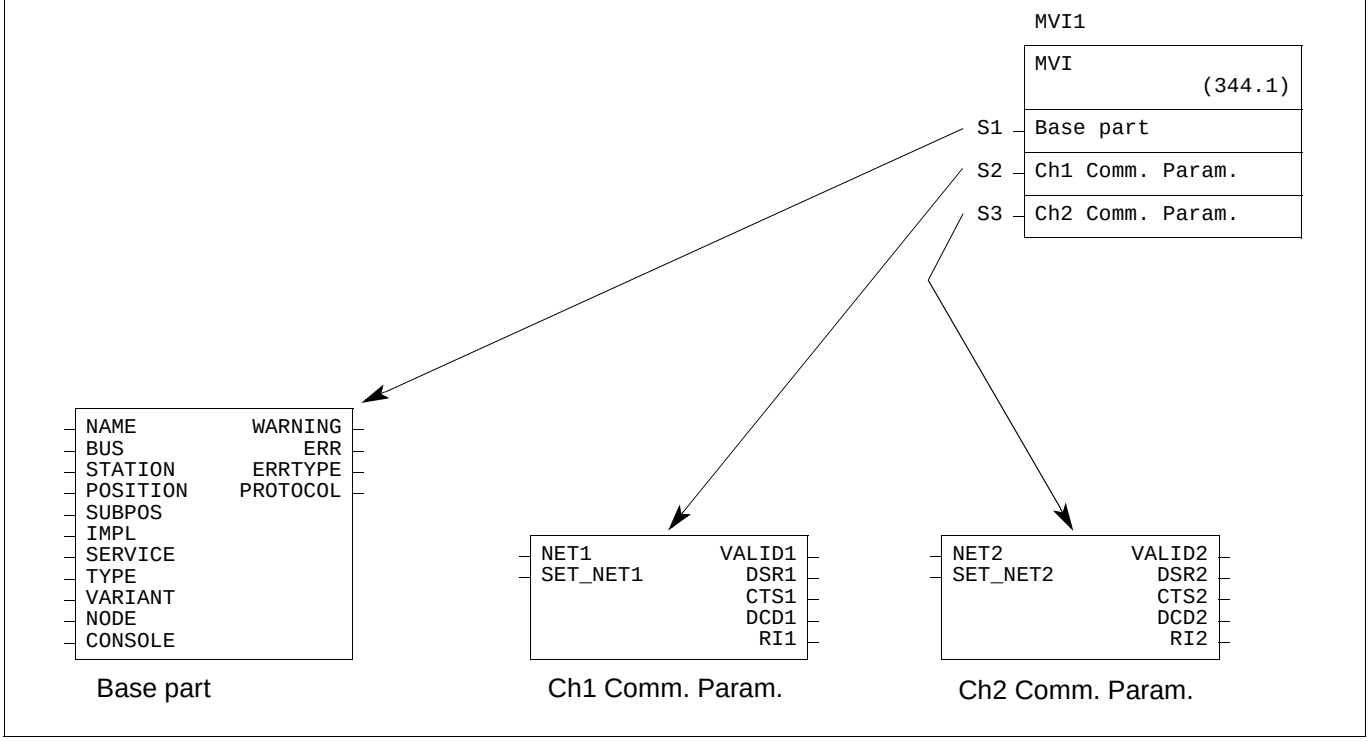
MVI CI532

Summary

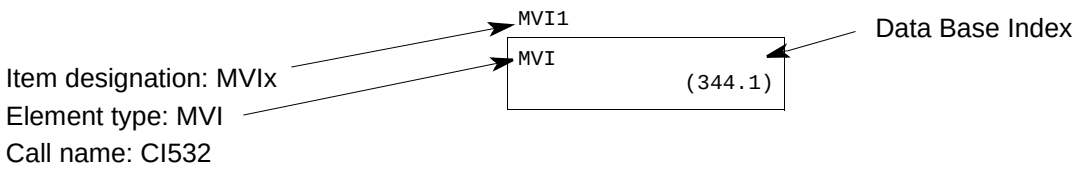
The data base element MVI represents the hardware CI532Vxx. CI532Vxx is an MVI module with two channels.

The channels are connected to separate MVI networks. This module is also used for the RCOM communication.

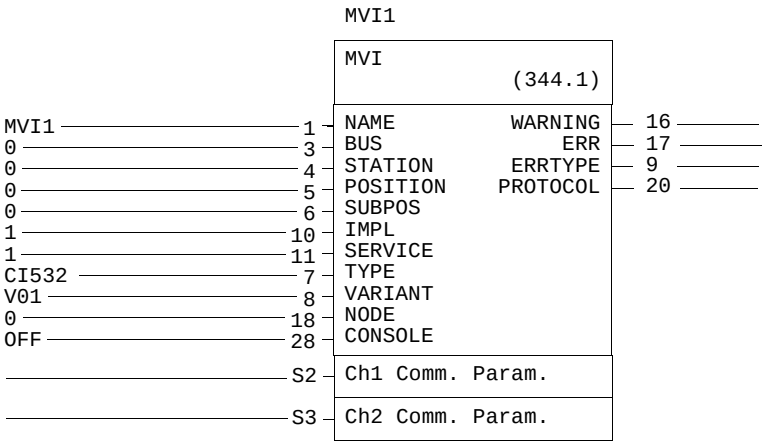
Overview



Head



Base part



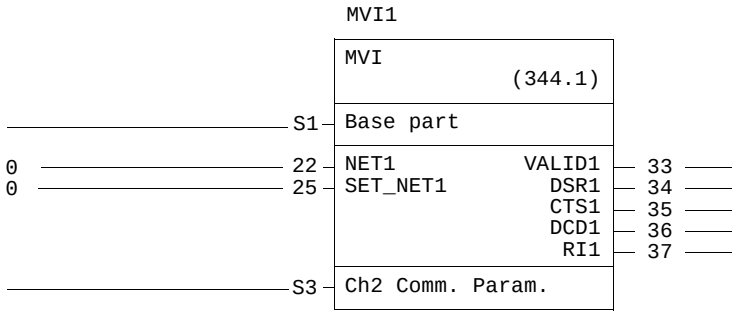
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	MVIx	–	Unique **NAME** of the element.	–
3	BUS	predef	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction
4	STATION	predef	0	–	**STATION**. Part of Address.	
5	POSITION	user	0	–	**POSITION**. Part of Address.	
6	SUBPOS	user	0	–	**SUBPOS**. Part of Address.	
10	IMPL	user	1	–	0=the module is spare 1=the module is **IMPL**emented	–
11	SERVICE	user	1	–	The in-**SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	CI532	–	**TYPE** designation of the hardware module.	–
8	VARIANT	user	V01	–	MVI protocol **VARIANT** 01, 02, …49. V01=RCOM V02=MODBUS V03=Siemens 3964(R)	V01 - V49

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
18	NODE	user	0	–	**NODE** number of the Advant Controller. Note! Once you have set node number, it can not be changed without COLD START of the Advant Controller.	0 - 255
28	CONSOLE	user	OFF	–	Setting **CONSOLE** to ON enables console function on channel 2. 0=OFF, 1=ON. Used for test purposes.	ON/OFF
16	WARNING	system	0	B(r)	**WARNING** flag indicating non-fatal errors.	–
17	ERR	system	0	B(r)	**ERR**or flag indicating hardware or configuration error.	–
9	ERRTYPE	system	0	I(r)	**ERR**or **TYPE**.	–
20	PROTOCOL	system	–	–	**PROTOCOL**, e.g. MODBUS, RCOM.	String 20 characters.

Ch1 Comm. Param.



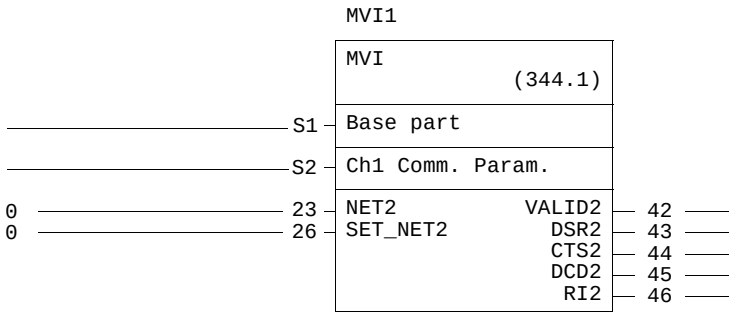
Terminal Description, Ch1 Comm. Param.

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
22	NET1	user	0	–	**NET**work number, channel 1.	0 - 9

Terminal Description, Ch1 Comm. Param. (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
25	SET_NET1	user	0	–	**SET NET**work number of channel 1. When SET_NET1 goes to 1, the network number of channel 1 is set to NET1. Note! Once you have set net number, it can not be changed without COLD START of the Advant Controller.	–
33	VALID1	system	0	–	Signals DSR1 etc. **VALID**.	–
34	DSR1	system	0	–	**D**ata **S**et **R**eady, channel **1**.	–
35	CTS1	system	0	–	**C**lear **T**o **S**end, channel **1**.	–
36	DCD1	system	0	–	**D**ata **C**arrier **D**etect, channel **1**.	–
37	RI1	system	0	–	**R**ing **I**ndicator, channel **1**.	–

Ch2 Comm. Param.



Terminal Description, Ch2 Comm. Param.

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
23	NET2	user	0	–	**NET**work number, channel **2**.	0 - 9
26	SET_NET2	user	0	–	**SET NET**work number of channel **2**. When SET_NET 2 goes to 1, the network number of channel 1 is set to NET2. Note! Once you have set net number, it can not be changed without COLD START of the Advant Controller.	–

Terminal Description, Ch2 Comm. Param. (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
42	VALID2	system	0	–	Signals DSR2 etc. **VALID**.	–
43	DSR2	system	0	–	**D**ata **S**et **R**eady, channel **2**.	–
44	CTS2	system	0	–	**C**lear **T**o **S**end, channel **2**.	–
45	DCD2	system	0	–	**D**ata **C**arrier **D**etect, channel **2**.	–
46	RI2	system	0	–	**R**ing **I**ndicator, channel **2**.	–

Function

The main functions of the element are:

- to indicate where in the subrack the hardware CI532Vxx is placed.
- to indicate the node number of the Advant Controller.
- to indicate net number of the MVI networks.

Normal Configuration

Create the data base element CI532

It is sufficient to modify the following inputs:

POSITION See section *Address Terminals BUS, STATION, POSITION and SUBPOS* in the Introduction.

SUBPOS See section *Address Terminals BUS, STATION, POSITION and SUBPOS* in the Introduction.

VARIANT V01 for CI532V01 etc. (VARIANT does not influence any function).

NODE The node number of the Advant Controller. If the Advant Controller has MasterBus 300 or GCOM, the node number is already defined. NODE then can be set only to the MasterBus 300/GCOM node number.

NOTE

Once you have set node number, it can not be changed without COLD START of the Advant Controller.

NET1 The network number of the MVI network connected to CI532Vxx channel 1.

SET_NET1 SET NETwork number of channel 1. When you set SET_NET1 to 1, you confirm the value of NET1.

Once you have set net number, it can not be changed without COLD START of the Advant Controller.

NET2 See NET1.

SET_NET2 See SET_NET1.

Special Configuration

SERVICE The input SERVICE means “in service”.
If you set SERVICE to 0 you stop the CI532Vxx modules.
If you set SERVICE to 1 you start again.

You can use the SERVICE input when you exchange the CI532Vxx module, however it is not necessary.

IMPL The input IMPL means implemented. The input IMPL is practically identical to SERVICE.
When IMPL= 0, you are allowed to:

– Change positions of CI532Vxx, that is, modify inputs POSITION and SUBPOS (also when the Controller is in operation mode).

Error Handling

WARNING Output WARNING is not used.

ERR Error.

ERRTYPE Error type, according to the following table:

ERRTYPE	Error
21	Duplicate node number on the network
22	More than one node number in the Controller
23	Controller connected to more than one Control network
25	Network number already used in Control network
31	Module not found, or internal bus error
32	Incorrect hardware identity on module
33	Start-up of module failed
34	Suspected hardware error
35	Incorrect software identity on module
36	Incorrect module interface identity
51	Illegal module position
52	Module position already used in the Controller

VALID1 Modem signals for channel 1 are valid.

DSR1, **CTS1**, **DCD1**, **RI1** Modem signals for channel 1. To read the modem signals, proceed as follows:

1. Observe the CI532 data base element in AS 100 Series ES (MDB MVIx).
2. Enter AS 100 Series ES command GVD, “Get values dynamically”.
3. Check that output VALID1 is 1.
4. Read modem signals DSR1, CTS1, DCD1, RI1 of CI532.

VALID2 Modem signals for channel 2 are valid.

DSR2, **CTS2**, **DCD2**, **RI2** Modem signals for channel 2.

SLAVE Module Numbers

For configuring the MVI application you use the data base elements MS, MVI Data Set.

For configuring the CI532Vxx hardware you use the CI532 element (with item designations MVI1, MVI2, …).

The MVI application has a “Slave module number”, which points out one CI532Vxx module according to the table below.

SLAVE module number (defined in MVI Data Sets)	Corresponding CI532 data base element item designation
7	MVI1
8	MVI2
9	MVI3
10	MVI4
11	MVI5

MVI free prog. CI535

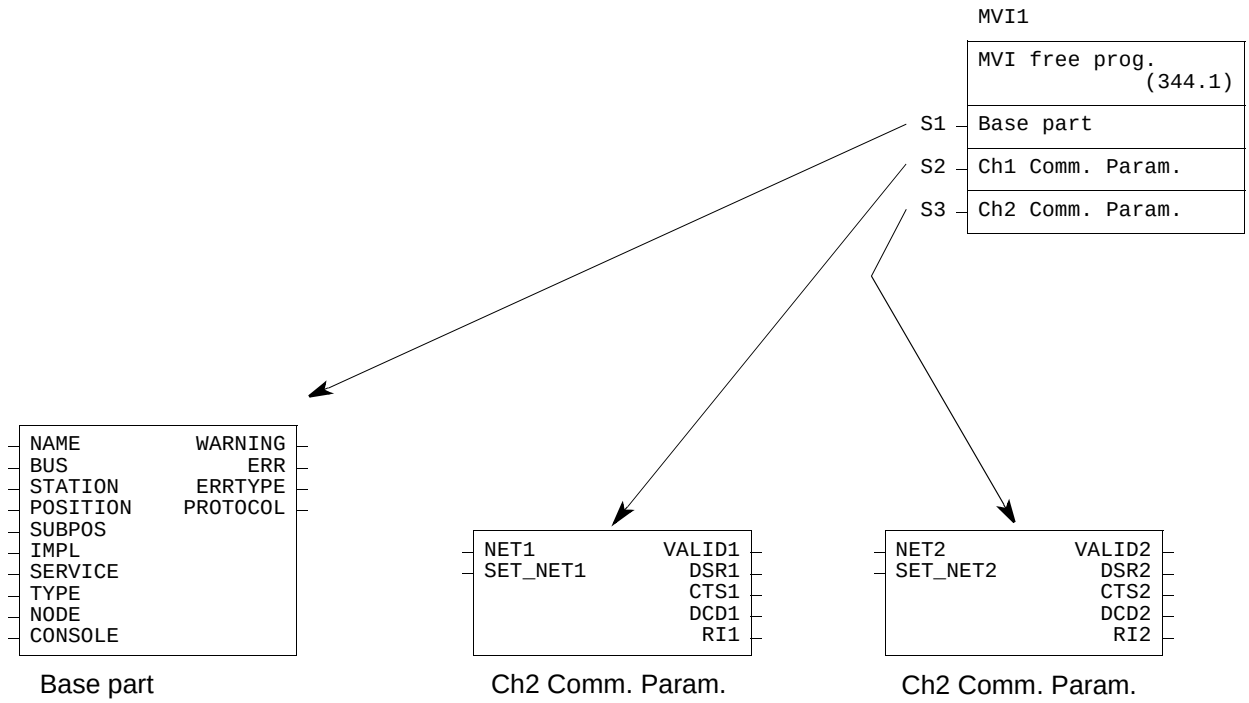
Summary

The data base element MVI free prog. represents the hardware CI535. CI535 is a free-programmable MVI module.

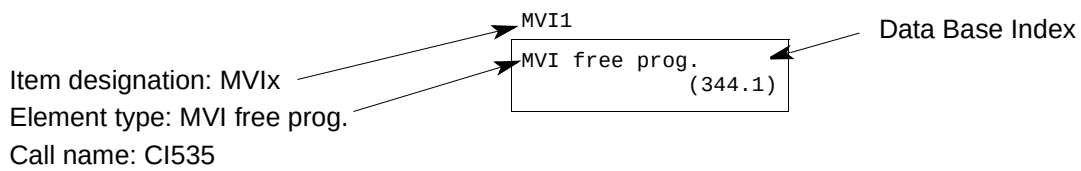
You configure the data base element MVI free prog. the same way as the data base element MVI.

The only difference between the data base elements MVI and MVI free prog. is the additional terminal VARIANT in MVI.

Overview



Head

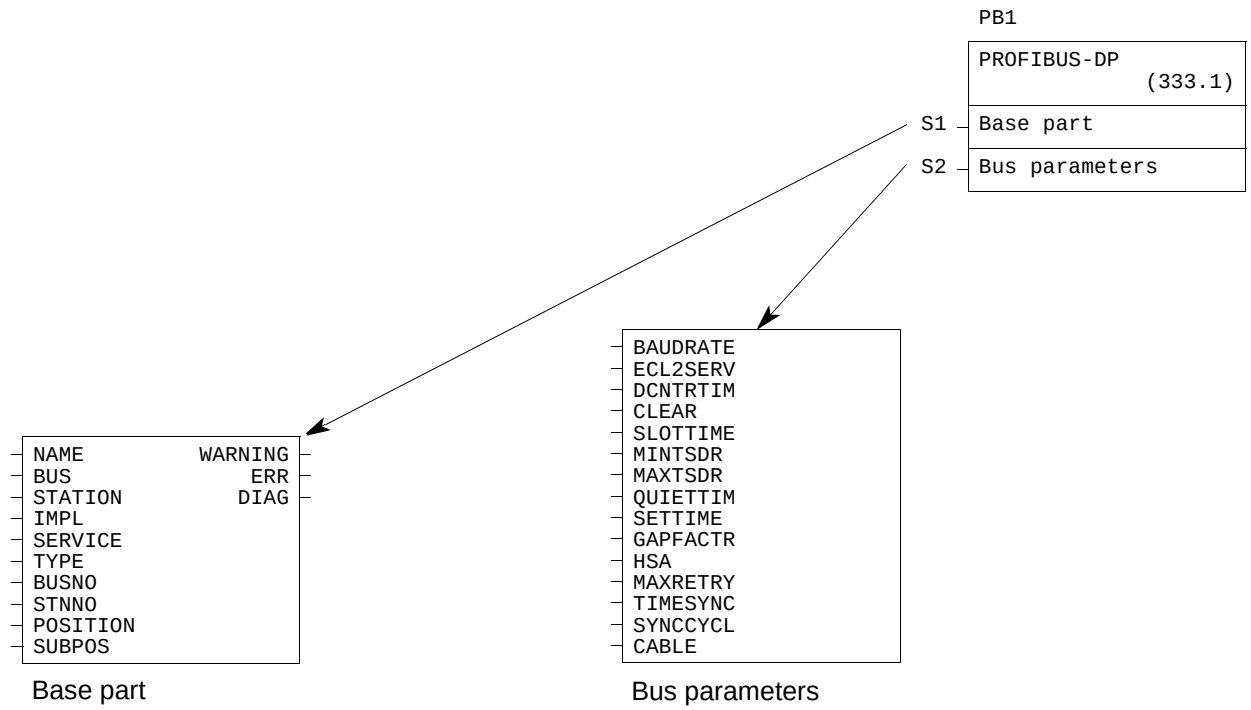


PROFIBUS-DP CI541

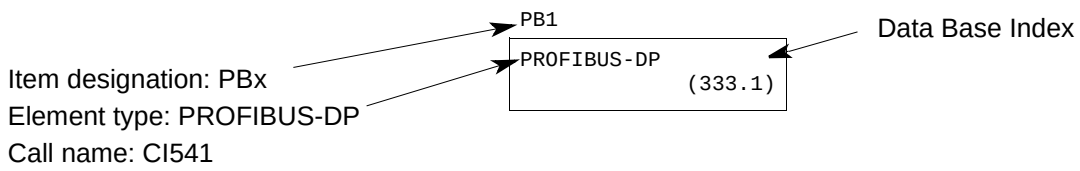
Summary

The PROFIBUS-DP data base element specifies the Communication Interface submodule CI541 that supports PROFIBUS-DP. The element contains configuration as well as diagnostic information of the physical CI541V1 submodule.

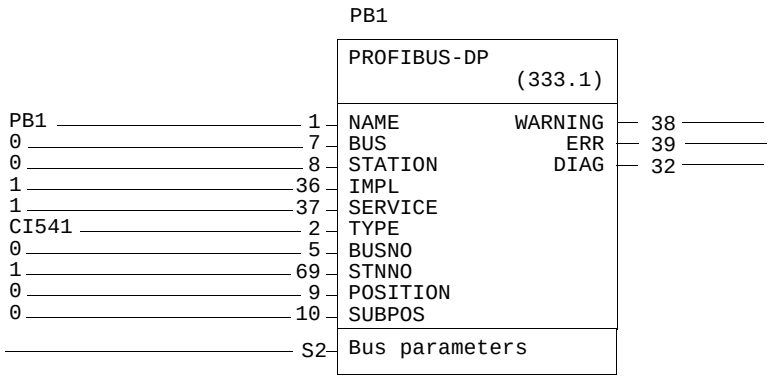
Overview



Head



Base part



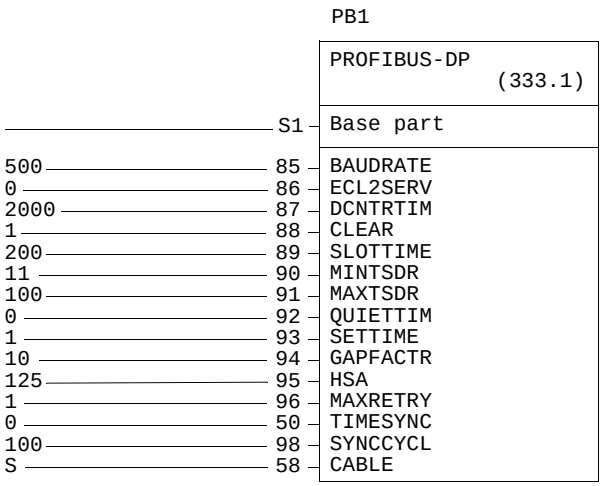
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	PBx	–	Unique **NAME** of the bus.	Maximum 20 characters.
7	BUS	predef	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction
8	STATION	predef	0	–	**STATION**. Part of Address.	
36	IMPL	user	1	B(r)	0=the module is spare 1=the module is **IMPL**emented	–
37	SERVICE	user	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service. 0=The module has been taken out of service 1=The module is in service (normal operation).	–
2	TYPE	predef	CI541	–	Module **TYPE** designation: CI541V1	–
5	BUSNO	user	0	–	Unique **BUS N**umber for this fieldbus.	0 - 255. Cannot be changed when IMPL=1 in operational mode. 0 not allowed for an active bus.

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
69	STNNO	user	1	–	**ST**atio**N N**umber representing the Controller on the fieldbus.	0 - 125. Cannot be changed when IMPL=1 in operational mode. 0 not allowed for an active bus.
9	POSITION	user	0	–	**POSITION**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction
10	SUBPOS	user	0	–	**SUBPOS**. Part of Address.	
38	WARNING	system	0	B(r)	**WARNING** flag indicating non-fatal errors.	–
39	ERR	system	0	B(r)	**ERR**or flag indicating hardware or configuration error.	–
32	DIAG	system	0	–	**DIAG**nostic information.	–

Bus parameters



Terminal Description, Bus parameters

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
85	BAUDRATE	user	500	–	**BAUDRATE** of PROFIBUS network in kilobytes per second (kbps). Values: 9.6, 19.2, 93.75, 187.5, 500, 1.5M, 3M, 6M, 12M.	May change other terminal values, see table below.
86	ECL2SERV	user	0	–	1=**E**nable **CL**ass **2 SERV**er access. 0=disable class 2 server access.	Allow PROFIBUS-DP master class 2 to read process data.
87	DCNTRTIM	user	2000	–	**D**ata **C**o**NTR**ol **TIM**e in milliseconds. Time-out supervision of master – slave dialog. Must be at least $6 \times T_{WD}$.	0 - 65535.
88	CLEAR	user	1	–	If data exchange fails: 1=Set output of all PROFIBUS-DP slaves to 0 (**CLEAR**) 0=Do not change outputs.	–
89	SLOTTIME	user	200	–	**SLOT TIME** T_{SL}. The maximum time a PROFIBUS-DP master must wait for a transaction response.	0 - 65535 t_{BIT}. Value may change if terminal BAUDRATE is changed. See table below.
90	MINTSDR	user	11	–	**MIN** $\mathbf{T_{SDR}}$. Minimum PROFIBUS-DP slave delay.	0 - 65535 t_{BIT}.
91	MAXTSDR	user	100	–	**MAX** $\mathbf{T_{SDR}}$. Maximum PROFIBUS-DP slave delay.	0 - 65535 t_{BIT}. Value may change if terminal BAUDRATE is changed. See table below.
92	QUIETTIM	user	0	–	**QUIETTIM**e T_{QUI}. Transmitter fall time.	0 - 255 t_{BIT}. Value may change if terminal BAUDRATE is changed. See table below.
93	SETTIME	user	1	–	**SET**up **TIME** T_{SET}. Time between event and reaction.	0 - 255 t_{BIT}. Value may change if terminal BAUDRATE is changed. See table below.

Terminal Description, Bus parameters (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
94	GAPFACTR	user	10	–	**GAP FACT**o**R**. Number of token rounds between GAP maintenance cycles.	0 - 100.
95	HSA	user	125	–	**H**ighest **S**tation (slave) **A**ddress configured on this bus.	2 - 126.
96	MAXRETRY	user	1	–	**MAX**imum number of times to **RETRY** transmission.	1 - 8. Value may change if terminal BAUDRATE is changed. See table below.
50	TIMESYNC	predef	0	–	**TIME SYNC**hronization. 0=No time synchronization 1=Time synchronization enabled	For future use.
98	SYNCCYCL	predef	100	–	**SYNC**hronization **CYCL**e.	For future use.
58	CABLE	predef	S	–	**CABLE** redundancy. S=single cable R=redundant cables	For future use.

The value of the following terminals changes to the specified default if terminal BAUDRATE is changed:

Defaults depending on BAUDRATE

BAUDRATE	SLOTTIME	MAXTSDR	QUIETTIM	SETTIME	MAXRETRY
9.6	100	60	0	1	1
19.2	100	60	0	1	1
93.75	100	60	0	1	1
187.5	100	60	0	1	1
500	200	100	0	1	1
1.5M	300	150	0	1	1
3M	400	250	3	4	2
6M	600	450	6	8	3
12M	1000	800	9	16	4

Function

The PROFIBUS-DP data base element specifies a PROFIBUS-DP network connected to an Advant Controller 400 Series. The data base element contains configuration and diagnostic information of the CI541V1 communication module itself as well as the PROFIBUS-DP bus.

The PROFIBUS-DP data base element can be created in the system but can not be removed. It is however possible to disable the function of the element by setting the IMPL terminal to 0. The data base element can also be reconfigured to specify a different PROFIBUS-DP bus if one fieldbus is removed and another is inserted in the system.

Communication Module Set-up Procedure

With the data base element you set up the communication module for the process communication program.

The communication module set-up procedure includes:

1. Implementation
2. Service
3. Parameters
4. Diagnostics.

1. Implementation

The PROFIBUS-DP communication module is configured with its parameters and started at system INIT if IMPL is set to 1. Setting IMPL to 1 in a running system means that the CI541V1 communication module is configured with its parameters and started. Connection to the PROFIBUS slaves on the corresponding network is established. Setting IMPL to 0 in a system in operational mode means that the CI541V1 communication module is disabled and the connection to the slaves is lost.

Reconfiguration of terminals such as POS and SPOS in a system with IMPL set to 1 is not allowed.

Reconfiguration of Bus parameters has no effect when IMPL is set to 1.

2. Service

The SERVICE terminal has similar functionality as the IMPL terminal, except that it is meant to be used for temporary disabling and repairs. Setting SERVICE to 0 will turn off all System Messages from this device.

3. Parameters

The BUSNO terminal specifies a unique bus number for this specific PROFIBUS-DP fieldbus. It can be used in other data base elements to specify when communicating via or if they are connected to this specific PROFIBUS-DP fieldbus. All fieldbuses in the systems (PROFIBUS and AF 100) need unique bus numbers. Please note that BUSNO **can not be changed** when the system is in operational mode.

The STNNO terminal specifies a unique station number for the Advant Controller 400 Series to be used on this PROFIBUS-DP bus.

4. Diagnostics

The PROFIBUS-DP data base element indicates diagnostics for both the CI541V1 communication module and the PROFIBUS-DP bus. The ERR terminal indicates fatal errors. The WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. One or more diagnostics indicators may be set. The diagnostics handling is described in the table below (error with highest priority first in table):

Diagnostic Information

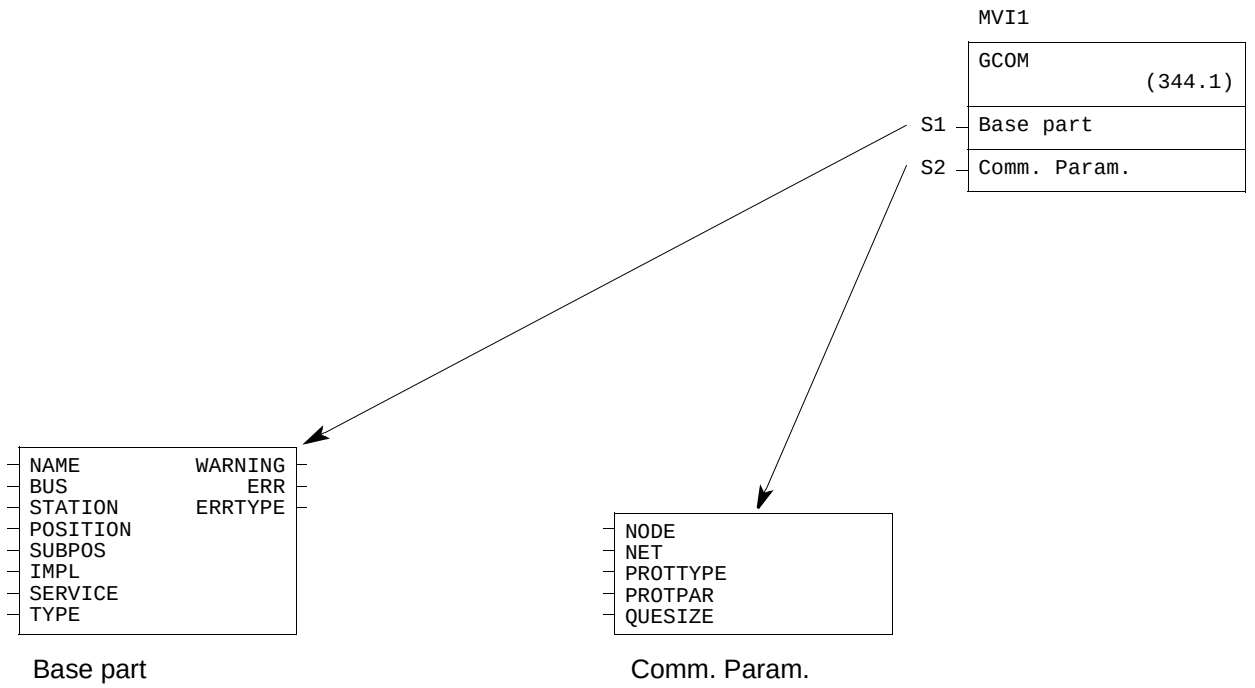
Condition	WARNING	ERR	DIAG	Action
Missing CI541. Device not accessible.	–	1	MNA	Insert CI541.
Cable bad.	–	1	FBE	Replace cable.
Internal software **E**rror.	–	1	IE	Toggle the IMPL flag.
Device Error.	–	1	ME	Replace CI541.
Configuration failed.	–	1	CE	Change configuration parameters.
System **E**rror.	1	0	SE	The reason for this error condition can be a number of things. Refer to the system message for more detailed information.
Process **E**rror.	1	0	PE	The reason for this error condition can be disturbance on PROFIBUS-DP or faulty CI541.
CI541 **p**a**s**si**v**e.	–	–	PSV	Set the IMPL flag.

GCOM CI543

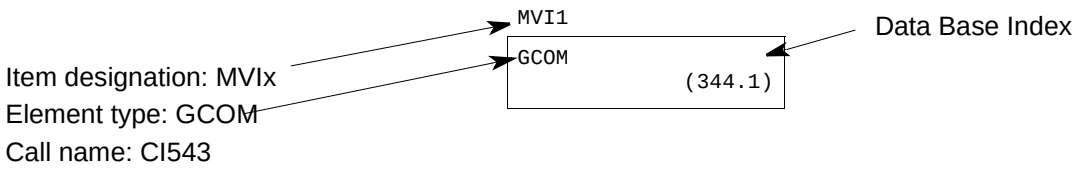
Summary

The GCOM data base element specifies the Multi Vendor Interface module CI543. The element contains information used to configure GCOM. The GCOM networks are considered as Local Control Networks. In an AC 400 node a maximum of 5 GCOM data base elements can be created.

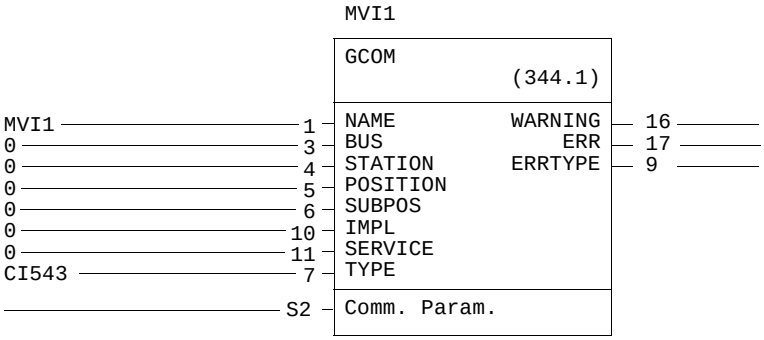
Overview



Head



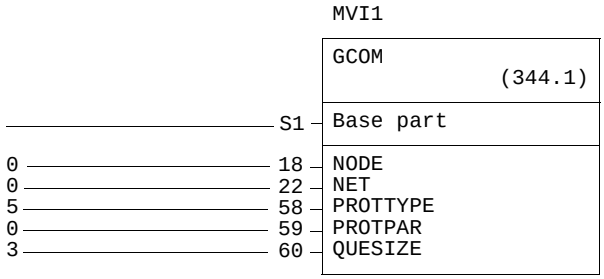
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	MVIx	–	Unique **NAME** of the element. Recommended: MVI1,..., MVI5.	–
3	BUS	predef	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction
4	STATION	predef	0	–	**STATION**. Part of Address.	
5	POSITION	user	0	–	**POSITION**. Part of Address.	
6	SUBPOS	user	0	–	**SUBPOS**. Part of Address.	
10	IMPL	user	0	–	0=the module is spare 1=the module is **IMPL**emented	–
11	SERVICE	user	0	–	The in-**SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	CI543	–	Hardware **TYPE** designation.	–
16	WARNING	system	0	B(r)	**WARNING** flag indicating non-fatal errors.	–
17	ERR	system	0	B(r)	**ERR**or flag indicating hardware or configuration error.	–
9	ERRTYPE	system	0	I(r)	**ERR**or **TYPE**.	–

Comm. Param.



Terminal Description, Comm. Param.

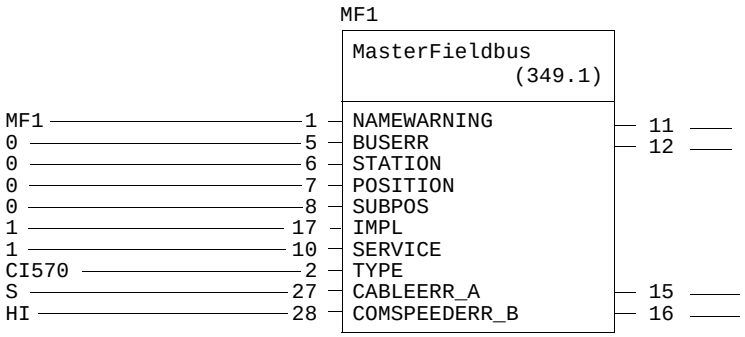
Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
18	NODE	user	0	–	**NODE** number of the Advant Controller. Note! Once you have set the node number, it can not be changed.	0 - 99
22	NET	user	0	–	**NET**work number.	0 - 127
58	PROTTYPE	user	5	–	**PROTOCOL TYPE**, 4 = GCOM High Performance 5 = GCOM Standard 6 = GCOM Fixed, 7 = GCOM Tesselator	4 - 7
59	PROTPAR	user	0	–	**PROT**ocol **PAR**ameter.	0 - 15
60	QUESIZE	user	3	–	Transceiver **QUE**ue **SIZE**.	1 - 15

Master Fieldbus CI570

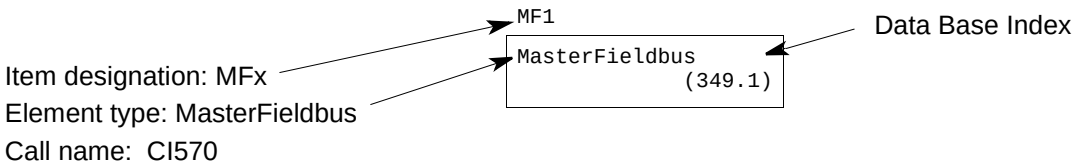
Summary

The Master Fieldbus data base element specifies a Master Fieldbus connection in the Advant Controller 400 Series.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	MFx	–	Unique **NAME** of the bus.	–
5	BUS	user	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction
6	STATION	user	0	–	**STATION**. Part of Address.	
7	POSITION	user	0	–	**POSITION**. Part of Address.	
8	SUBPOS	user	0	–	**SUBPOS**. Part of Address.	

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
17	IMPL	user	1	B(r)	0=the module is spare 1=the module is **IMPL**emented	–
10	SERVICE	dialog	1	B(r/w)	The in-**SERVICE** terminal shows whether the submodule is in service or has been taken out of service.	–
2	TYPE	predef	CI570	–	**TYPE** designation of the hardware module.	–
27	CABLE	user	S	–	**CABLE** connection: S=single, R=redundant.	–
28	COMSPEED	user	HI	–	**COM**munication **SPEED**: HI=high or LO=low.	–
16	WARNING	system	0	B(r)	**WARNING** flag indicating non-fatal errors.	–
17	ERR	system	0	B(r)	Flag indicating hardware or configuration **ERR**or.	–
15	ERR_A	system	–	B(r)	**ERR**or indication for bus cables.	–
16	ERR_B	system	–	B(r)	**ERR**or indication for bus cables.	–

Function

The Master Fieldbus data base element specifies a Master Fieldbus connection in the Advant Controller 400 Series.

The data base element indicates diagnostic information (ERR and WARNING) for the CI570 communication module and the status of the Master Fieldbus. Diagnostics for redundant media is indicated on the terminals ERR_A and ERR_B.

Module Set-up Procedure

With the data base element you set up the communication module for the process communication program.

The communication module set-up procedure includes:

1. Implementation and disabling
2. Parameters
3. Error handling.

1. Implementation and disabling

The CI570 communication module is configured with its parameters and started at system INIT if IMPL and SERVICE is set to 1. Setting IMPL and SERVICE to 1 in a running system means that the CI570 is configured with its parameters and started. Connection to the Master Fieldbus units is established.

Setting IMPL or SERVICE to 0 in a running system means that the CI570 is shut down and the connection to the Master Fieldbus units is lost. All implemented unit data base elements will report an error.

2. Parameters

The CI570 communication module can be connected to single or redundant media (one or two cables). The CABLE terminal specifies if single or redundant media is installed for the Master Fieldbus. The default is single media.

The Master Fieldbus can be configured to run at high or low speed. The COMSPEED terminal specifies if HI or LO is used for the Master Fieldbus. The default is high speed (HI).

The CABLE and COMSPEED terminals can be configured before a CI570 is started. This means that if the system is in operational mode, the IMPL or SERVICE must first be set to 0 to reconfigure the terminals.

3. Error handling

The ERR terminal is set in the Master Fieldbus data base element, if the supervision function has determined the CI570 communication module to be non-functional. Typical errors are non-existent hardware, or no unit is implemented on the fieldbus, or improperly configured POSITION and SUBPOS terminals.

The ERR_A and ERR_B indicates diagnostics for the media when redundancy is selected. The ERR_A indicates diagnostics for the media when single media is selected.

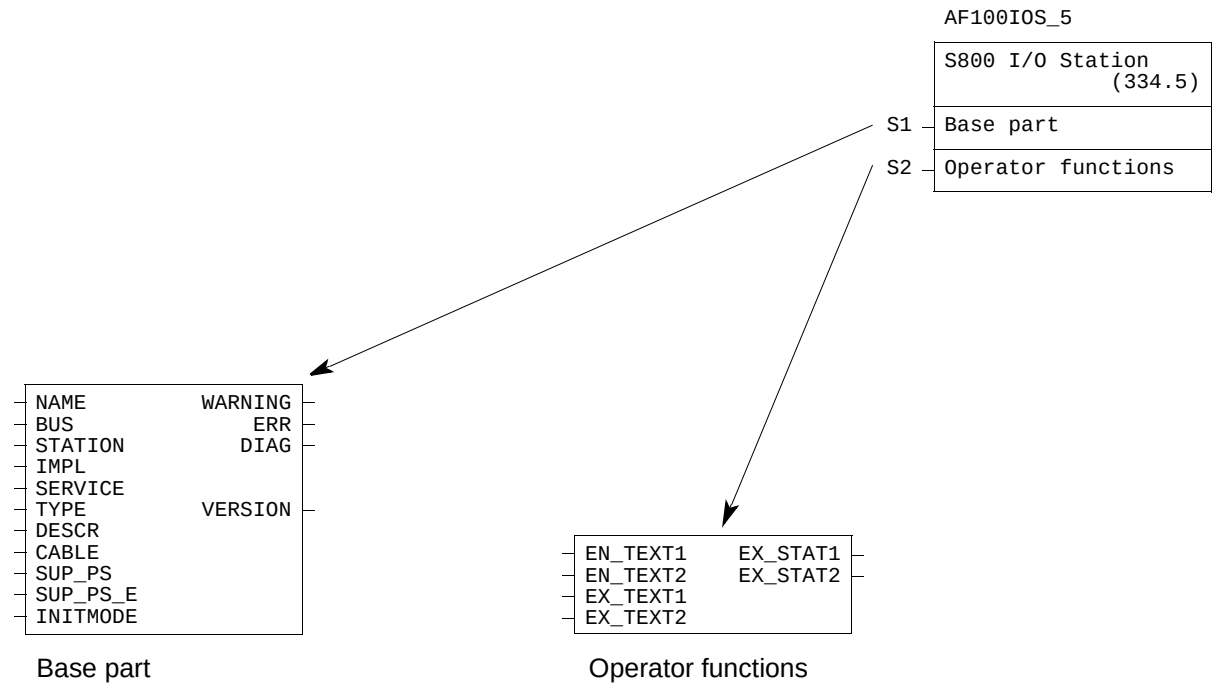
ERR is reset, at hardware errors, automatically within 5 seconds of replacement of the communication module. The fault LED on the communication module is turned on when ERR is set, if the CI570 communication module is still accessible.

S800 I/O Station CI810

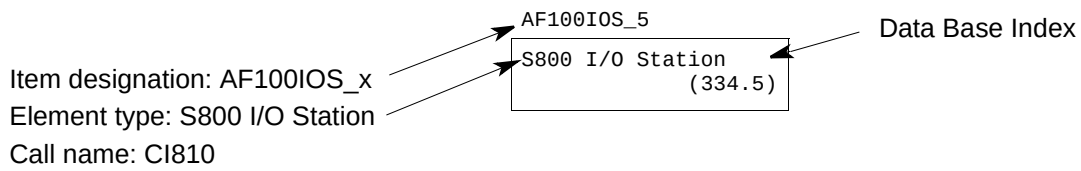
Summary

The S800 I/O Station data base element specifies an S800 I/O Station on Advant Fieldbus 100 connected to an Advant Controller 400 Series. The data base element contains diagnostic information of the S800 I/O station.

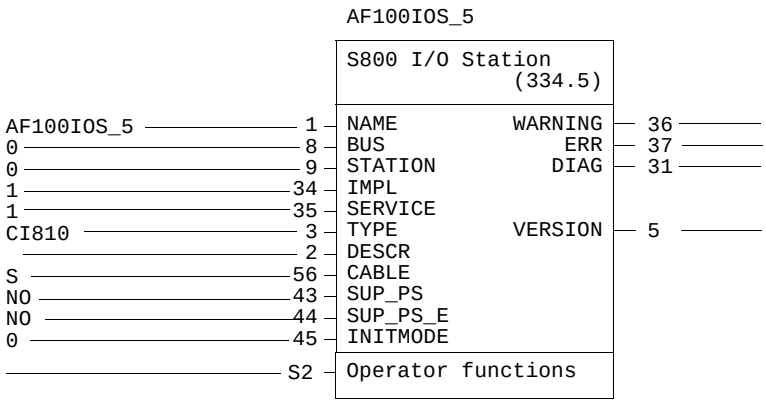
Overview



Head



Base part



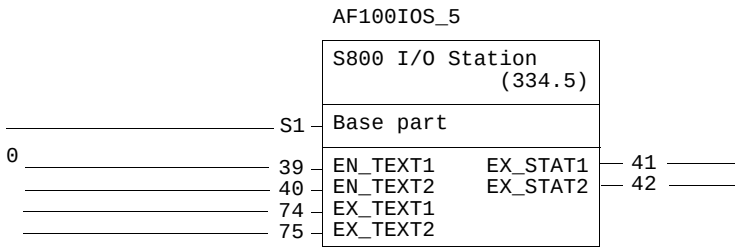
Terminal Description, Base part

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	user	AF100IOS_x	–	Unique **NAME** of the I/O station.	Maximum 20 characters.
8	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
9	STATION	user	0	–	**STATION**. Part of Address.	
34	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
35	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	Not used
3	TYPE	predef	CI810	–	Station **TYPE** designation.	–
2	DESCR	user		–	**DESCR**iption.	–
56	CABLE	user	S	–	**CABLE** connection: S=Single, R=Redundant	–
43	SUP_PS	user	NO	–	Enable **SUP**ervision of redundant **P**ower **S**upplies: YES=enabled NO=not enabled	–
44	SUP_PS_E	user	NO	–	Enable **SUP**ervision of redundant **P**ower **S**upplies on the opto-fibre **E**xpansion: YES=enabled NO=not enabled	Not used.

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
45	INITMODE	user	0	B(r)	**INIT MODE** used when the module is initialized. 1=the module event queue will be flushed during init. 0=the module event queue will not be flushed during init.	–
36	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
31	DIAG	system	–	I(r)	**DIAG**nostics.	See the table “S800 I/O Station Diagnostic Information”.
5	VERSION	system	–	–	Software **VERSION** of the S800 I/O station.	The string is read when establishing the (re-) connection.

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
39	EN_TEXT1	user	NO	–	**EN**able **TEXT 1** for extended status supervision: YES=enabled NO=not enabled	–
40	EN_TEXT2	user	NO	–	**EN**able **TEXT 2** for extended status supervision: YES=enabled NO=not enabled	–

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
74	EX_TEXT1	user	–	–	**EX**tended status **TEXT 1** to be displayed in the Operator Station.	Maximum 20 characters.
75	EX_TEXT2	user	–	–	**EX**tended status **TEXT 2** to be displayed in the Operator Station.	Maximum 20 characters.
41	EX_STAT1	PC	–	B(r/w)	**EX**tended **STAT**us **1** indication shown in the Operator Station S800 I/O Station Status: 0 = a red crossed square, 1 = a green filled square	–
42	EX_STAT2	PC	–	B(r/w)	**EX**tended **STAT**us **2** indication shown in the Operator Station S800 I/O Station Status: 0 = a red crossed square, 1 = a green filled square	–

Function

The S800 I/O Station (CI810) data base element specifies an S800 I/O station connected to an Advant Controller 400 Series via Advant Fieldbus 100. The data base element contains diagnostic information of both the CI810 communication module itself and an general overview status of its I/O modules.

The S800 I/O Station data base element can be created and deleted in an operational Advant Controller 400 Series. It is possible to disable the function of the element by setting the IMPL terminal to 0. The data base element can also be reconfigured to specify a different Advant Fieldbus 100 bus if one fieldbus is removed and another is inserted in the system.

Module Set-up Procedure

With the data base element you set up the communication module for the process communication program.

The communication module set-up procedure includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION) terminals
4. Parameters
5. Load calculation on AF 100 for S800 I/O station
6. Diagnostics.

1. Implementation

The Advant Fieldbus 100 data base communication module is configured with its parameters and started at system INIT if IMPL is set to 1. Setting IMPL to 1 in a running system means that the CI810 communication module is configured with its parameters and started. Connection to the I/O station on Advant Fieldbus 100 is established. Setting IMPL to 0 in a system in operational mode means that the CI810 communication module is shut down and the connection to the I/O station is lost.

2. Disabling

The SERVICE terminal has no functionality, use the IMPL terminal to disable the S800 I/O station.

3. Selection of address (BUS, STATION) terminals

How to select the address terminals BUS and STATION can be found in section “Address terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.

For the S800 I/O Station data base element the engineering tool checks that the specified BUS and STATION combination is unique within the AC 400 Series Controller. In addition for the CI810 data base element it is checked that no DSP data base element is configured with the same BUS and STATION combination.

4. Parameters

The CI810 communication module can be connected to single or redundant media (one or two cables). The terminal CABLE specifies if single or redundant media is installed for the Advant Fieldbus 100. The default is single media.

The CI810 includes two digital inputs (SA and SB) for monitoring of redundant power supply. The SUP_PS specifies if the monitoring shall be enabled (YES) or disabled (NO).

The SUP_PS_E terminals is currently not used.

The EN_TEXT1 terminal specifies if the text specified on terminal EX_TEXT1 shall be shown together with an indication (EX_STAT1) in the Operator Station S800 I/O Station Status display.

The EN_TEXT2 terminal specifies if the text specified on terminal EX_TEXT2 shall be shown together with an indication (EX_STAT2) in the Operator Station S800 I/O Station Status display.

The EX_STAT1 and EX_STAT2 terminals shall be updated by the application program. A red crossed square will be shown as the indication when the value is set to zero (0). A green filled square will be shown as the indication when the value is set to one (1).

5. Load calculation on AF 100 for S800 I/O station

The load on AF 100 for one S800 I/O station (CI810 + all S800 I/O modules in the station) can be calculated using the formula below:

$$\text{S800 I/O Station load} = \text{CI810 load} + \Sigma \text{S800 I/O module load}$$

CI810 load = 0.033%.

The load figures for the I/O modules depends on the I/O module and the selected cycle time.

The total load on AF 100 may not exceed 75%. To calculate the total load on AF 100 see *Advant Fieldbus 100 User’s Guide.*

6. Diagnostics

The S800 I/O station data base element indicates diagnostic information for an S800 I/O station on Advant Fieldbus 100.
The ERR terminal indicates fatal errors and WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. One or more diagnostics indicators may be set.
The conditions are listed in descending order of severity. The less severe indicators will be omitted, if all indicators do not fit within the available 20 characters.

S800 I/O Station Diagnostic Information

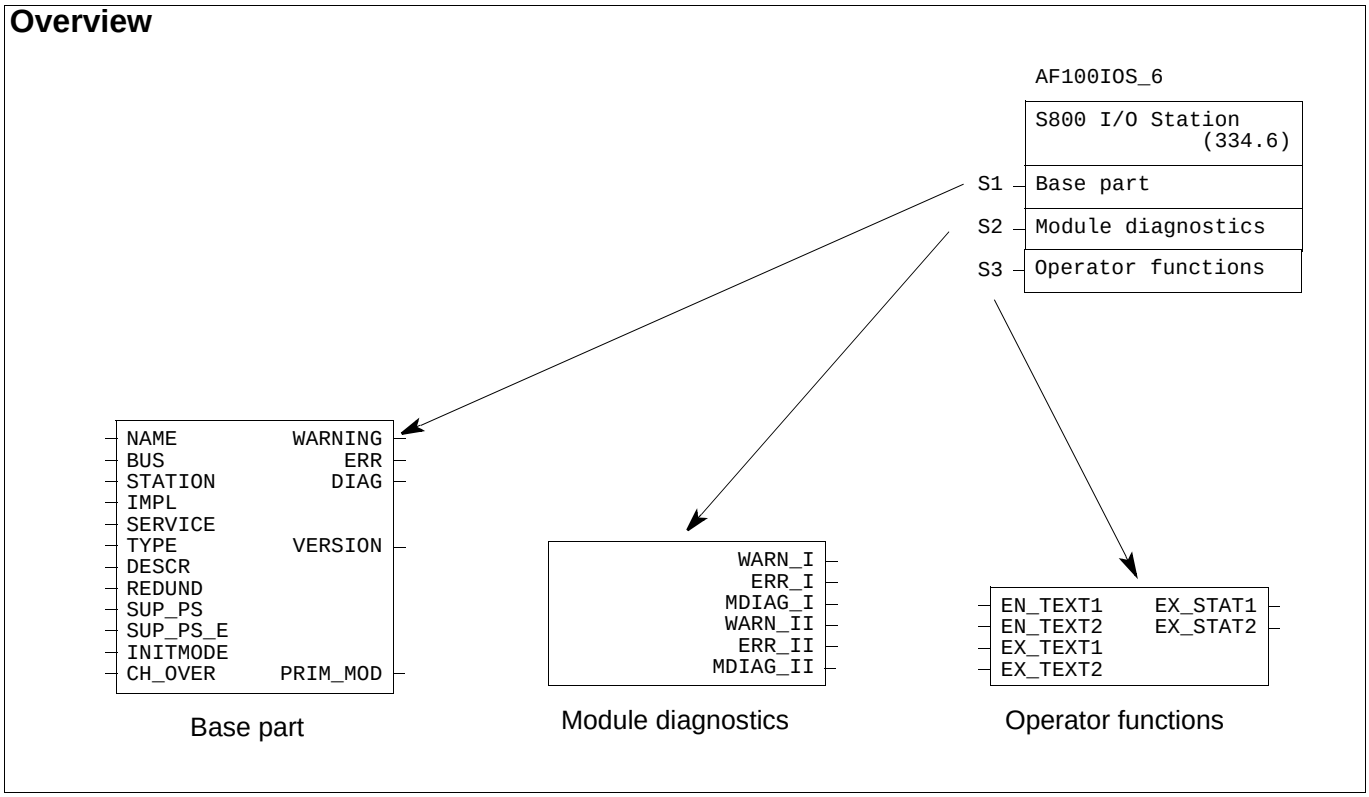
Condition	WARNING	ERR	DIAG	Action
IDentification **F**ailure	–	1	IDF	Verify that connected station is of specified type.
Station **N**ot **A**vailable	–	1	SNA	Check comm. media. Check connected station.
ACTive / NOT active	– / 1	– / –	ACT / –	Station is active / Station is NOT active in normal operation mode
General station **E**rror	–	1	GE	Check connected station.
Severe **E**rror	–	1	SE	Check connected station.
General **W**arning	1	–	GW	Check connected station.
Station S**W E**rror	–	1	SWE	Check application program in the connect station.
Peripheral **H**ardware **E**rror	1	–	PHE	Check hardware in the connected station
Redundant **C**able **1** bad	1	–	RC1	Check media (cable 1)
Redundant **C**able **2** bad	1	–	RC2	Check media (cable 2)
Redundant **P**ower **A** failure	1	–	RPA	Check power supply unit A
Redundant **P**ower **B** failure	1	–	RPB	Check power supply unit B
PRocess **E**rrors	1	–	PRE	Possible I/O hardware or input signal error in the connected station.
Station **HW E**rror	1	–	HWE	Non-fatal error in the connected station
Cable **R**edundancy **A**vailable	–	–	CRA	Station is configured to have redundant media if indicated in DIAG
Changed **D**iagnostics	–	–	CD	-

S800 I/O Station CI820

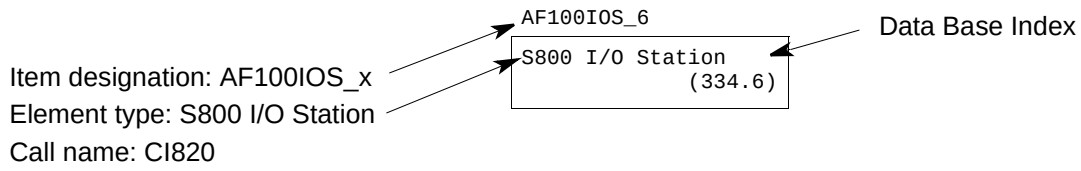
Summary

The S800 I/O Station data base element specifies an S800 I/O Station on Advant Fieldbus 100 connected to an Advant Controller 400 Series that supports redundant CI820 modules. The data base element contains diagnostic information of the S800 I/O station and the physical CI820 submodule(s).

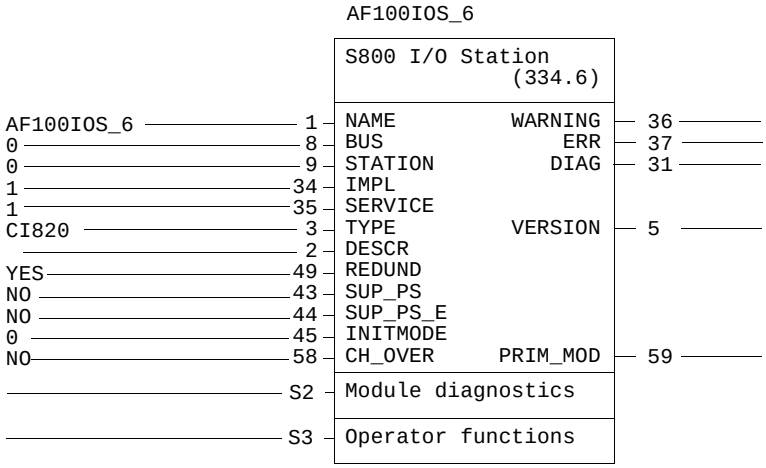
Overview



Head



Base part



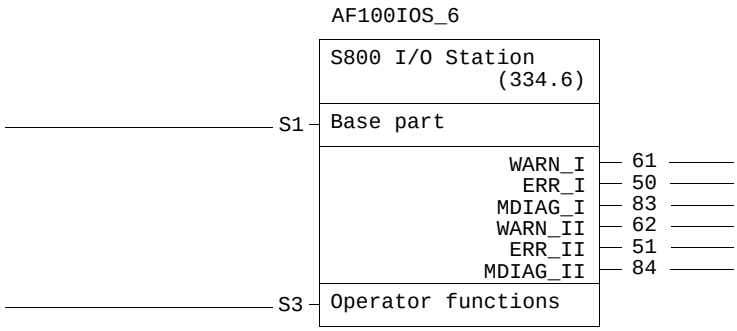
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	AF100IOS_x	–	Unique **NAME** of the I/O station.	Maximum 20 characters.
8	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
9	STATION	user	0	–	**STATION**. Part of Address.	
34	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
35	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	Not used
3	TYPE	predef	CI820	–	Station **TYPE** designation.	–
2	DESCR	user	–	–	**DESCR**iption.	–
49	REDUND	user	YES	–	**REDUND**ancy: YES=Redundant CI820 NO=Single CI820 (not used)	Cannot be changed when IMPL=1 in op. mode.
43	SUP_PS	user	NO	–	Enable **SUP**ervision of redundant **P**ower **S**upplies: YES=enabled NO=not enabled	–

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
44	SUP_PS_E	user	NO	–	Enable **SUP**ervision of redundant **P**ower **S**upplies on the opto-fibre **E**xpansion: YES=enabled NO=not enabled	Not used.
45	INITMODE	user	0	B(r)	**INIT MODE** used when the module is initialized. 1=the module event queue will be flushed during init. 0=the module event queue will not be flushed during init.	–
58	CH_OVER	user	NO	B(r/w)	**CH**ange **OVER**. YES will order a change of primary CI820.	–
36	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
31	DIAG	system	–	I(r)	**DIAG**nostics for the CI820 station.	See the table “S800 I/O Station Diagnostic Information”.
5	VERSION	system	–	–	Software **VERSION** of the S800 I/O station.	The string is read when establishing the (re-) connection.
59	PRIM_MOD	system	–	B(r)	**PRIM**ary **MOD**ule, shown as I or II.	–

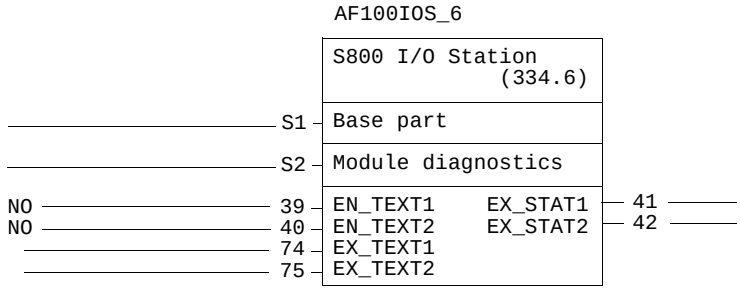
Module diagnostics



Terminal Description, Module diagnostics

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
61	WARN_I	system	–	B(r)	**WARN**ing flag indicating non-fatal errors on CI820 module **I**.	–
50	ERR_I	system	–	B(r)	**ERR**or flag indicating hardware or configuration error on CI820 module **I**.	–
83	MDIAG_I	system	–	I(r)	**DIAG**nostics CI820 module **I**.	–
62	WARN_II	system	–	B(r)	**WARN**ing flag indicating non-fatal errors on CI820 module **II**.	–
51	ERR_II	system	–	B(r)	**ERR**or flag indicating hardware or configuration error on CI820 module **II**.	–
84	MDIAG_II	system	–	I(r)	**DIAG**nostics CI820 module **II**.	–

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
39	EN_TEXT1	user	NO	–	**EN**able **TEXT 1** for extended status supervision: YES=enabled NO=not enabled	–
40	EN_TEXT2	user	NO	–	**EN**able **TEXT 2** for extended status supervision: YES=enabled NO=not enabled	–

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
74	EX_TEXT1	user	–	–	**EX**tended status **TEXT 1** to be displayed in the Operator Station.	Maximum 20 characters.
75	EX_TEXT2	user	–	–	**EX**tended status **TEXT 2** to be displayed in the Operator Station.	Maximum 20 characters.
41	EX_STAT1	PC	–	B(r/w)	**EX**tended **STAT**us **1** indication shown in the Operator Station S800 I/O Station Status: 0 = a red crossed square, 1 = a green filled square	–
42	EX_STAT2	PC	–	B(r/w)	**EX**tended **STAT**us **2** indication shown in the Operator Station S800 I/O Station Status: 0 = a red crossed square, 1 = a green filled square	–

Function

The S800 I/O Station (CI820) data base element specifies an S800 I/O station connected to an Advant Controller 400 Series via Advant Fieldbus 100. The data base element contains diagnostic information of both the CI820 communication module itself and an general overview status of its I/O modules.

The S800 I/O Station data base element can be created and deleted in an operational Advant Controller 400 Series. It is possible to disable the function of the element by setting the IMPL terminal to 0. The data base element can also be reconfigured to specify a different Advant Fieldbus 100 bus if one fieldbus is removed and another is inserted in the system.

Module Set-up Procedure

With the data base element you set up the communication module for the process communication program.

The communication module set-up procedure includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION) terminals
4. Parameters
5. Load calculation on AF 100 for S800 I/O station
6. Diagnostics.

1. Implementation

The Advant Fieldbus 100 data base communication module is configured with its parameters and started at system INIT if IMPL is set to 1. Setting IMPL to 1 in a running system means that the CI820 communication module is configured with its parameters and started. Connection to the I/O station on Advant Fieldbus 100 is established. Setting IMPL to 0 in a system in operational mode means that the CI820 communication module is shut down and the connection to the I/O station is lost.

2. Disabling

The SERVICE terminal has no functionality, use the IMPL terminal to disable the S800 I/O station.

3. Selection of address (BUS, STATION) terminals

How to select the address terminals BUS and STATION can be found in section “Address terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.

For the S800 I/O Station data base element the engineering tool checks that the specified BUS and STATION combination is unique within the AC 400 Series Controller. In addition for the CI820 data base element it is checked that no DSP data base element is configured with the same BUS and STATION combination.

4. Parameters

The CI820 communication module can be connected as single or redundant (one or two units). The terminal REDUND specifies if single or redundant units is installed for the Advant Fieldbus 100. The default is single unit.

The CI820 includes two digital inputs (SA and SB) for monitoring of redundant power supply. The SUP_PS specifies if the monitoring shall be enabled (YES) or disabled (NO).

The SUP_PS_E terminals is currently not used.

The EN_TEXT1 terminal specifies if the text specified on terminal EX_TEXT1 shall be shown together with an indication (EX_STAT1) in the Operator Station S800 I/O Station Status display.

The EN_TEXT2 terminal specifies if the text specified on terminal EX_TEXT2 shall be shown together with an indication (EX_STAT2) in the Operator Station S800 I/O Station Status display.

The EX_STAT1 and EX_STAT2 terminals shall be updated by the application program. A red crossed square will be shown as the indication when the value is set to zero (0). A green filled square will be shown as the indication when the value is set to one (1).

5. Load calculation on AF 100 for S800 I/O station

The load on AF 100 for one S800 I/O station (CI820 + all S800 I/O modules in the station) can be calculated using the formula below:

$$\text{S800 I/O Station load} = \text{CI820 load} + \Sigma\text{S800 I/O module load}$$

CI820 load = 0.033%.

The load figures for the I/O modules depends on the I/O module and the selected cycle time.

The total load on AF 100 may not exceed 75%. To calculate the total load on AF 100 see *Advant Fieldbus 100 User’s Guide*.

6. Diagnostics

The S800 I/O station data base element indicates diagnostic information for an S800 I/O station on Advant Fieldbus 100.
The ERR terminal indicates fatal errors and WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. One or more diagnostics indicators may be set.
The conditions are listed in descending order of severity. The less severe indicators will be omitted, if all indicators do not fit within the available 20 characters.

S800 I/O Station Diagnostic Information

Condition	WARNING	ERR	DIAG	Action
IDentification **F**ailure	–	1	IDF	Verify that connected station is of specified type.
Station **N**ot **A**vailable	–	1	SNA	Check comm. media. Check connected station.
ACTive / NOT active	– / 1	– / –	ACT / –	Station is active / Station is NOT active in normal operation mode
General station **E**rror	–	1	GE	Check connected station.
Severe **E**rror	–	1	SE	Check connected station.
General **W**arning	1	–	GW	Check connected station.
Station S**W E**rror	–	1	SWE	Check application program in the connect station.
Peripheral **H**ardware **E**rror	1	–	PHE	Check hardware in the connected station
Redundant **C**able **1** bad	1	–	RC1	Check media (cable 1)
Redundant **C**able **2** bad	1	–	RC2	Check media (cable 2)
Redundant **P**ower **A** failure	1	–	RPA	Check power supply unit A
Redundant **P**ower **B** failure	1	–	RPB	Check power supply unit B
PRocess **E**rrors	1	–	PRE	Possible I/O hardware or input signal error in the connected station.
Station **HW E**rror	1	–	HWE	Non-fatal error in the connected station
Cable **R**edundancy **A**vailable	–	–	CRA	Station is configured to have redundant media if indicated in DIAG
Changed **D**iagnostics	–	–	CD	-

MDIAG

The MDIAG_I and MDIAG_II terminals will hold two diagnoses separated by a comma.

The diagnoses are the FCI state and the Redundancy state.

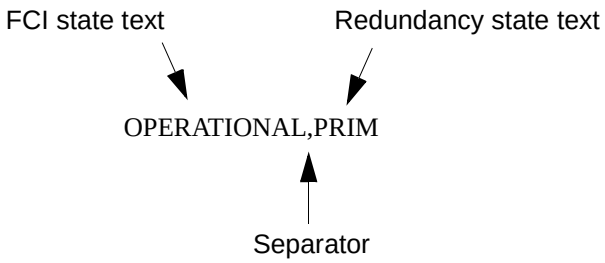
FCI state

Text	Comment
OPERATIONAL	Operational
READY	Ready
NOT CONF	Not configured
ERROR	Error
INIT	Init
WRONG TYPE	Wrong module type
CONFIGURING	Config. running
ERROR	Forced to error
HW MISSING	No answer
	Undefined, blank in printout

Redundancy state

Text	Comment
NOT READY	Not ready
SINGLE	Redundancy disabled
PRIM	Primary state
BUP	Backup state
PRIMSWI	Switching to backup
BUPTEMP	Backup 255
PRIMFAIL	Fail suspected, primary
BUPFAIL	Fail suspected, backup
HW MISS	No partner found
BUPERROR	Bad partner
	Undefined, blank in printout

Example of a diagnose combination for a MDIAG terminal:

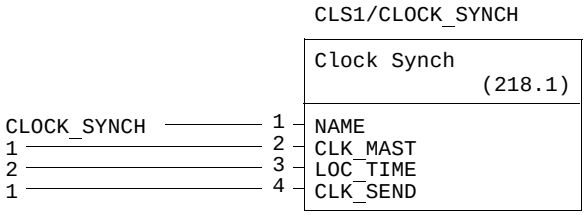


Clock Synch CLOCKSYNCH

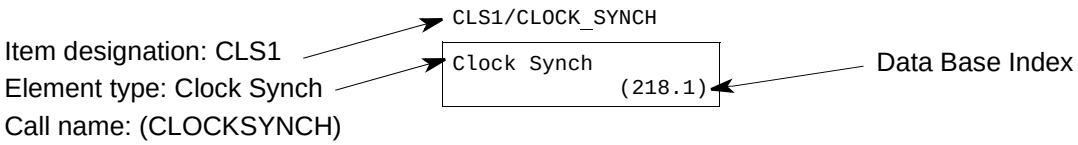
Summary

The data base element Clock Synch is included in Advant Controller 400 Series, Advant Station 500 Series Operator Station and MasterGate 230/1. It defines synchronization of the clocks in the nodes of a network.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	predef	CLOCK_ SYNCH	–	**NAME**. The name may not be changed by the user.	–
2	CLK_MAST	user	1	B(r/w)	**CL**oc**K MAST**er candidate in a Control Network. See clock master section for details. 1=Permission to become clock master or backup. 0=No permission to become clock master or backup.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
3	LOC_TIME	user	2	I(r)	**LOC**al **TIME** dependence. Possible values 0 - 3. 0=The local time may not be affected. 1=The local time may be affected only by time set messages. 2=The local time may be affected both by time set messages and cyclic adjust time messages. **Note**! This value may not be used if external clock synch is connected. 3=Only high precision time synch messages may adjust the local clock.	–
4	CLK_SEND	user	1	I(r)	**CL**oc**K SEND**. Defines permission to send time messages (a time set message and cyclic adjust time messages): 0=The node is not allowed to send time messages. 1=The node is allowed to send time messages only within its own control network. 2=The node is allowed to send a time set message to all connected control networks (over plant networks), but cyclic time adjust messages only within its own control network. 3=The node is allowed to send all time messages to all connected control networks.	–

Clock Master

A node becomes clock master of connected network, when receiving a clock setting command provided by a Advant Station 500 Series Operator Station or MasterView 320 dialog, if it has CLK_MAST=1 and CLK_SEND >0. When this happen that node sends one time set message and continues by sending cyclic time adjust messages both as standard network time messages and if MasterBus 300 is used as High Precision time synch close to hardware. With standard network time messages the time accuracy between different nodes is better than 1 s.

With High Precision time synch the relative error in time on the same network bus segment is max 3 ms.

An exception for selection of clock master exists if the time is set in an Advant Station. If CLK_MAST = FALSE and CLK_SEND > 0 then this node will send a time set message to all its neighbors and try to select one of them as master.

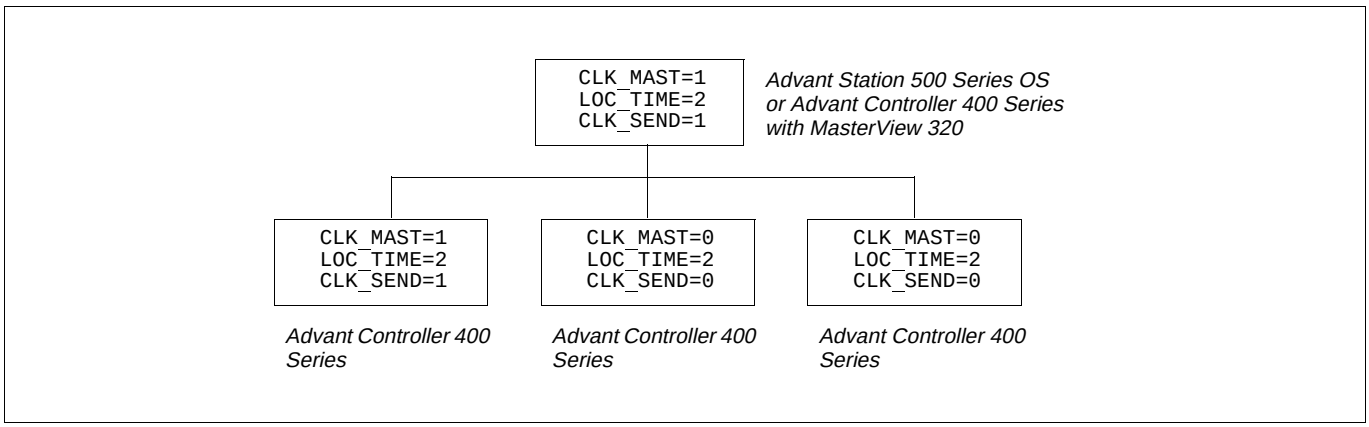
When a node becomes clock master, another node in the network becomes a backup node, if the latter has CLK_MAST = 1 and CLK_SEND > 0. Only one backup node will be provided if several candidates exist - which one is a matter of chance.

The backup node becomes clock master if the clock master disappears from the network. The previous clock master does not automatically become clock master when it returns to the network.

A clock synchronization accuracy of 2 ms may be provided by an external minute pulse to all nodes in the network. For more information of the external minute pulse, please refer to the manual *Advant Controller 400 Series User's Guide*.

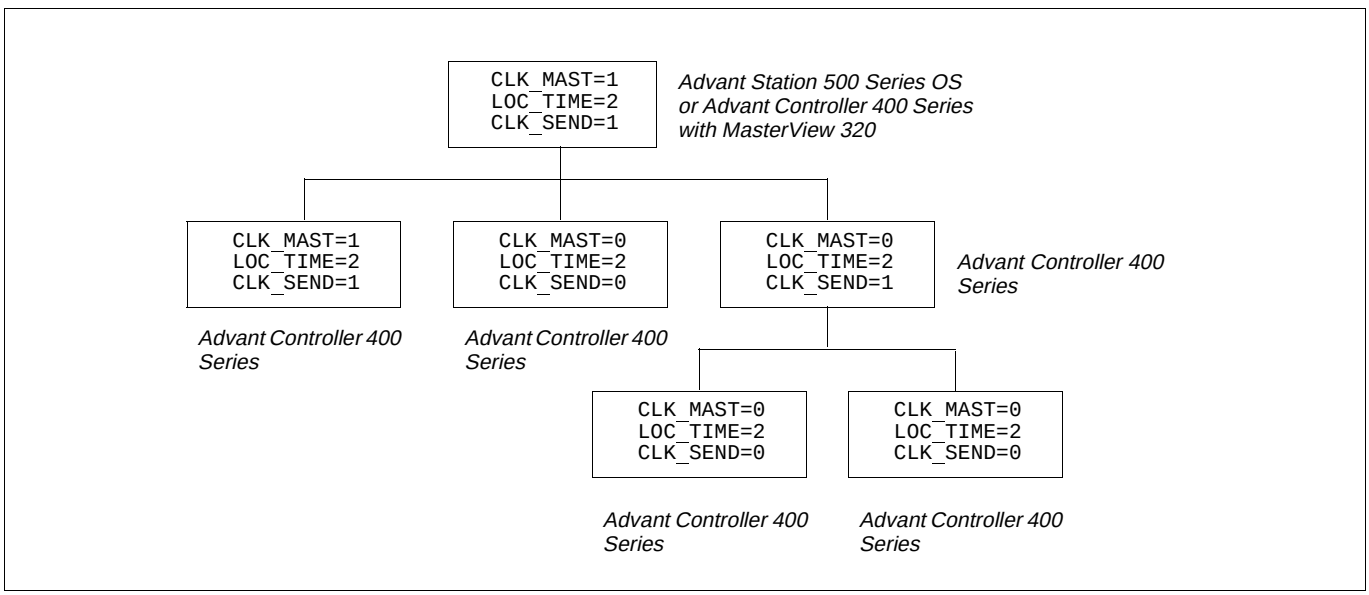
Example 1:

Clock synchronization in a control network. If there is only one Operator Station in the network at a minimum one Advant Controller 400 Series should be allowed to be backup.



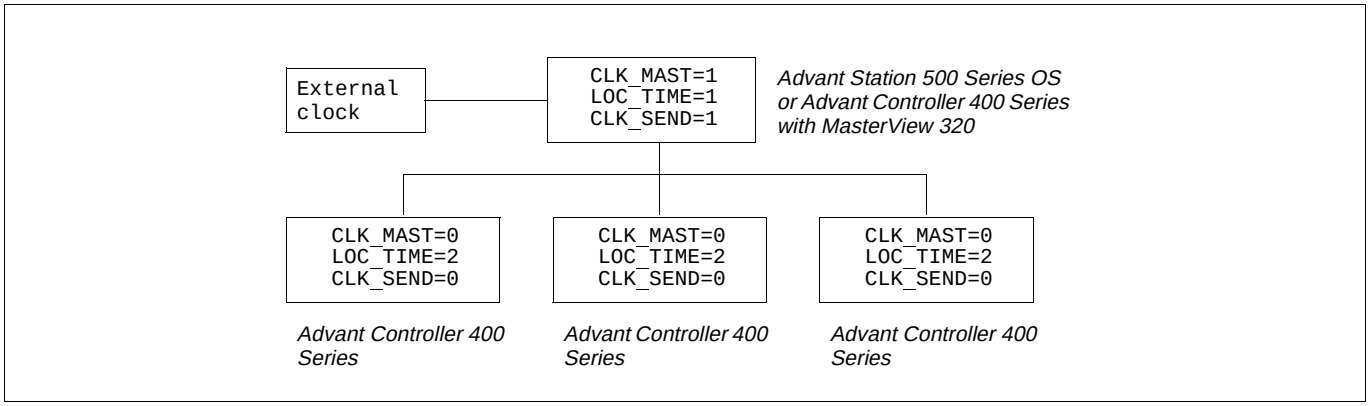
Example 2:

Clock synchronization in a network with a local control network. CLK_SEND must be 1 in the Advant Controller 400 Series with the local control network if the time shall be distributed to local control network.



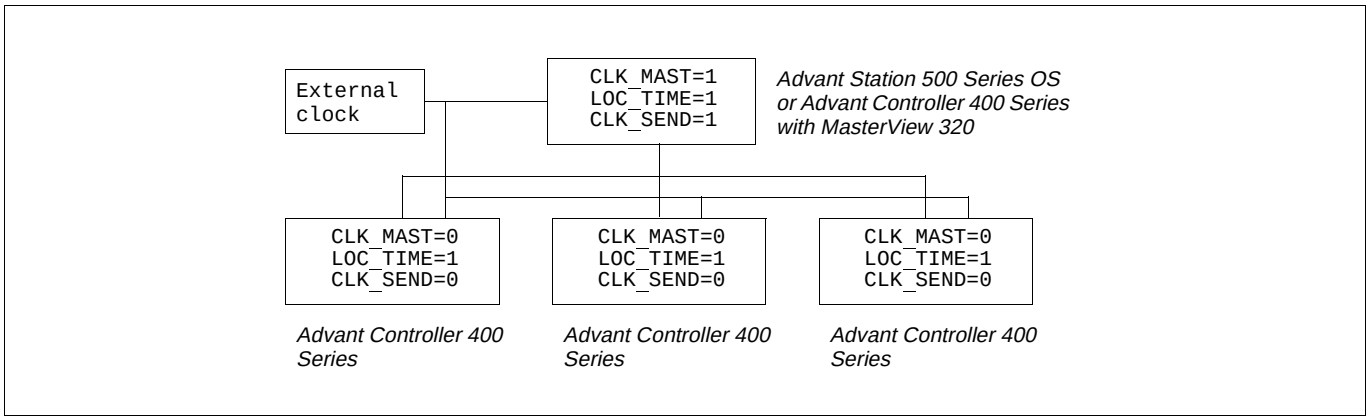
Example 3:

Clock synchronization in a control network with external clock synchronization connected to Operator Station. In this configuration (used for prevent from drift of system time) the backup function cannot be used. This is because no one of the Advant Controller 400 Series have external clock synchronization.



Example 4:

Clock synchronization in a control network with external clock synchronization connected to all nodes. LOC_TIME must have the value 1. This is because the cyclic clock adjustment over MasterNet shall not affect the local clock.

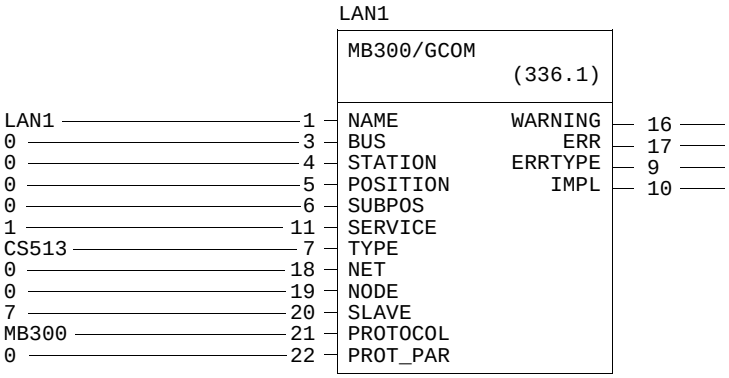


MB300/GCOM CS513

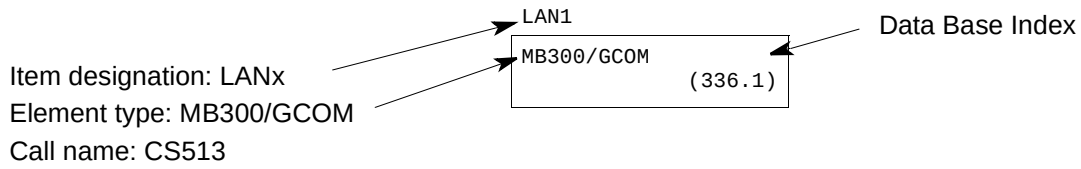
Summary

The data base element MB300/GCOM represents the hardware CS513. CS513 interfaces MasterBus 300 or GCOM, that is Local Network (LAN).

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	LANx	–	Unique **NAME** of the element.	–
3	BUS	predef	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
4	STATION	predef	0	–	**STATION**. Part of Address.	
5	POSITION	system	0	–	**POSITION**. Part of Address.	
6	SUBPOS	system	0	–	**SUBPOS**. Part of Address.	

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
11	SERVICE	user	1	–	The in-**SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	CS513	–	**TYPE** designation of the hardware module.	–
18	NET	system	0	–	**NET**work number.	–
19	NODE	system	0	–	**NODE** number.	–
20	SLAVE	predef	7	–	**SLAVE** board number.	–
21	PROTOCOL	system	MB300	–	**PROTOCOL**. Possible values are: MB300, MB300_F, MB300_E, GCOM, GCOM_F, GCOM_S.	
22	PROT_PAR	user	0	–	**PRO**tocol **PAR**ameter. Used for GCOM only.	–
16	WARNING	system	0	B(r)	**WARNING** flag indicating non-fatal errors.	–
17	ERR	system	0	B(r)	**ERR**or flag.	–
9	ERRTYPE	system	0	I(r)	**ERR**or **TYPE**.	–
10	IMPL	system	0	–	Implemented. **IMPL**=1 means that the Controller has found and installed the CS513.	–

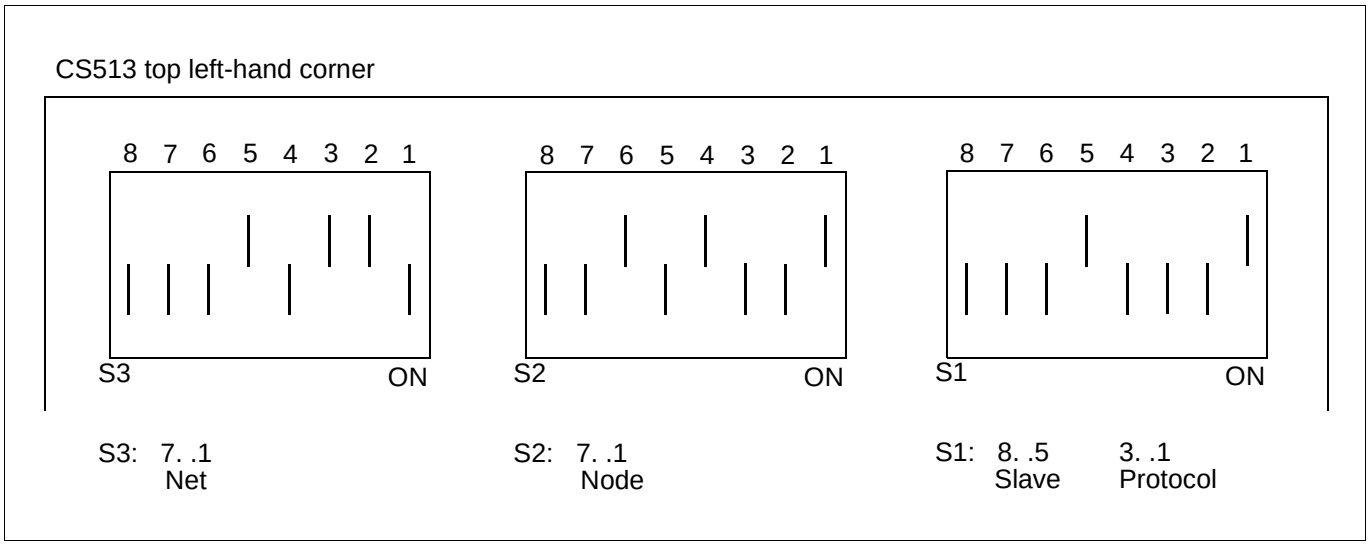
Function

The main functions of the element are:

- to indicate where in the subrack the hardware CS513 is placed.
- to indicate how the dip switches of CS513 are set.
- For GCOM: to define time-out times (“Protocol parameter”).

Dip switches of CS513

CS513 has the following dip switches:



In this example, Net=22, Node=41, Slave=1, Protocol=1.

NOTE

The inscription “ON” under the dip switches is misleading!

Protocols

Dip Switch Setting	Protocol	Comment
1	MB300	Variable packet frame size
2	MB300_F	Fixed packet frame size
3	MB300_E	Extended. For communication via bridges
5	GCOM	Variable packet frame size
6	GCOM_F	Fixed packet frame size
7	GCOM_S	Special version, for communication with TESSELATOR

SLAVE Board Numbers

For complete instructions on SLAVE board numbers, see MasterNet documentation.

Advant Controller 410

Set SLAVE of one CS513 to 7. Set SLAVE of the other CS513 to 8.

Advant Controller 450

A SLAVE board is the carrier module SC520 or SC530. MasterBus 300 and GCOM execute in the SLAVE board.

You call the SLAVE board any number 1 - 6.

Example:

1. You have one SC520. Set SLAVE of CS513:s in that SC520 to 1.
2. You add one SC520. Set SLAVE of CS513:s in that SC520 to 2.

Additional SLAVE board numbers 7 - 8 are used in configurations where MasterBus 300 does not execute in a SLAVE board. The carrier module SC510 is not a SLAVE board, because it has no slave processor. There are also special cases where CS513 is mounted in an SC520, but does not utilize the SC520 as a SLAVE board.

Example 1:

1. You have one SC510. Set SLAVE of one CS513 in that SC510 to 7.
2. Set SLAVE of the other CS513:s in that SC510 to 8.

Example 2:

1. You have one SC510. Set SLAVE of the CS513:s in that SC510 to 7.
2. You add one SC510. Set SLAVE of the CS513:s in that SC510 to 8.

Relation between SLAVE board number and CS513 data base element

The hardware module CS513 is represented by the data base element CS513.

The SLAVE board number defines which CS513 element is relevant.

Relations

Data base element item designation	SLAVE board number
LAN1	7
LAN2	8
LAN3-LAN6	*Not used*
LAN7	1, upper subposition
LAN8	1, lower subposition

Relations (Continued)

Data base element item designation	SLAVE board number
LAN9	2, upper subposition
LAN10	2, lower subposition
LAN11	3, upper subposition
LAN12	3, lower subposition
LAN13	4, upper subposition
LAN14	4, lower subposition
LAN15	5, upper subposition
LAN16	5, lower subposition
LAN17	6, upper subposition
LAN18	6, lower subposition

GCOM Time-out Times

For tuning GCOM time-out times, you can use the input PROT_PAR (Protocol parameter). Tuning time-out times is necessary when communicating via bridges which introduce delays and limit the bandwidth.

Time-out times for GCOM

Data base element input PROT_PAR	GCOM time-out times
0	Acknowledge time-out for a message = 250 ms. Transit vector transmission every 1s. Used for normal GCOM links without bridges.
1 - 15	Acknowledge time-out for a message = 500ms *PROT_PAR. Transit vector transmission every 1s*PROT_PAR.

SERVICE and IMPL

SERVICE The input SERVICE means “in service”.
If you set SERVICE to 0 you stop the CS513.
If you set SERVICE to 1 you start CS513 again

IMPL The output IMPL means implemented.
The Controller sets IMPL to 1 after installing the CS513.

NOTE

Do not try to modify the IMPL output yourself!

Error Handling

WARNING Output WARNING is not used.

ERR Error.

ERRTYPE Error type, according to the following table:

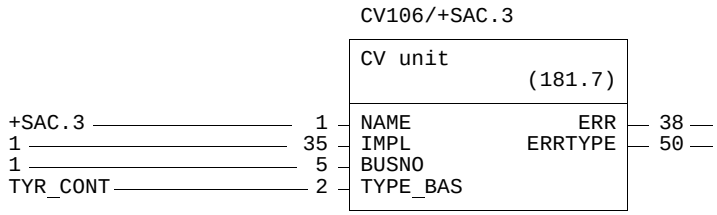
ERRTYPE	Error
21	Duplicate node number on the network
22	More than one node number in the Controller
23	Controller connected to more than one Control network
25	Network number already used in Control network
31	Module not found, or internal bus error
32	Incorrect hardware identity on module
33	Start-up of module failed
34	Suspected hardware error
35	Incorrect software identity on module
36	Incorrect module interface identity
39	Heart beat (SQE) error from the LAN transceiver (lost contact with the transceiver)
50	Illegal slave number
51	Illegal module position
52	Module position already used in the Controller
52	Module position already used in the Controller
53	Two carrier modules have the same slave number
54	Two CS513 modules have the same slave number (7 or 8) for MasterBus 300 executing in main CPU

CV unit CV

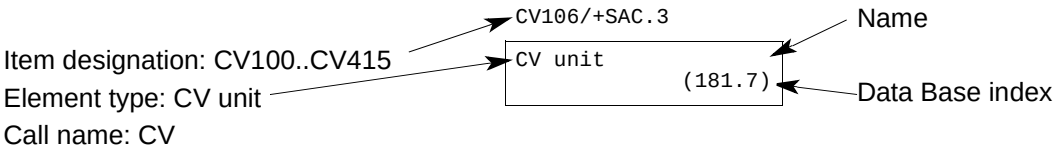
Summary

The CV unit data base element holds the data necessary to define a thyristor convertor or MasterPiece 80 connected to the Master Fieldbus.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	CVx	–	Unique **NAME** of thyristor convertor or MasterPiece 80.	Max. 8 characters. See section “BUSNO - Bus number”.
35	IMPL	user	1	B(r)	**IMPL**emented. 0=The unit is spare 1=The unit is implemented	–
5	BUSNO	user	*	I(r)	**BUS N**umber. The number of the bus to which the unit is connected.	See section “BUSNO - Bus number”.
2	TYPE_BAS	user	TYR _CONT	–	The value shall be TYR_CONT for the products Tyrak, Midi/L/XL, CONTractL, SAMI-Star and MasterPiece 80. The board **TYPE** of the unit.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
30	ERR	system	–	–	**ERR**or flag indicating error stopping execution.	–
50	ERRTYPE	system	–	–	**ERR**or **TYPE**.	See the table for Error Codes.

Error Codes

Error codes for the ERRTYPE connection is shown in the table below. The flag indicates that the connection has been set.

Flag	ERRTYPE	Error
	Not initiated	Wrong BUSNO, IMPL=0 at system init or the system has not started.
E	Bus controller error	The bus controller board (CI570) is either not functioning properly or is missing.
E	Communication error	There is a communication error and the unit is not responding.
E	TYPE_BAS miss-match	The unit type is not the one that has been designated in TYPE_BAS.
E	Other error	Can be temporarily set during restart
	Error Channel A	Error on redundant channel A (modem, cable?)
	Error Channel B	Error on redundant channel B (modem, cable?)
	OK	No error.

If there are several simultaneous errors the most serious error is shown.

The error types at the top of the table are the most serious ones, those at the bottom are less serious.

BUSNO - Bus Number

You select the bus that the CV unit is to be connected to with BUSNO.

The lowest bus number with less than 16 units is selected as the default value for BUSNO.

BUSNO can be changed at any time that the system is in configuration mode.

BUSNO is shown as the first digit in the Item designation. The second and third digits show the number of the node.

Item designation: CVabb a = bus
bb = node on bus

Example:

Item designation: CV409
BUSNO: 4
Node on bus: 9

Data (Boolean Data) DAT(B)

Summary

The DAT data base element contains a data value. The data value is given a NAME and a VALID flag.

The data type is specified by the element parameter:

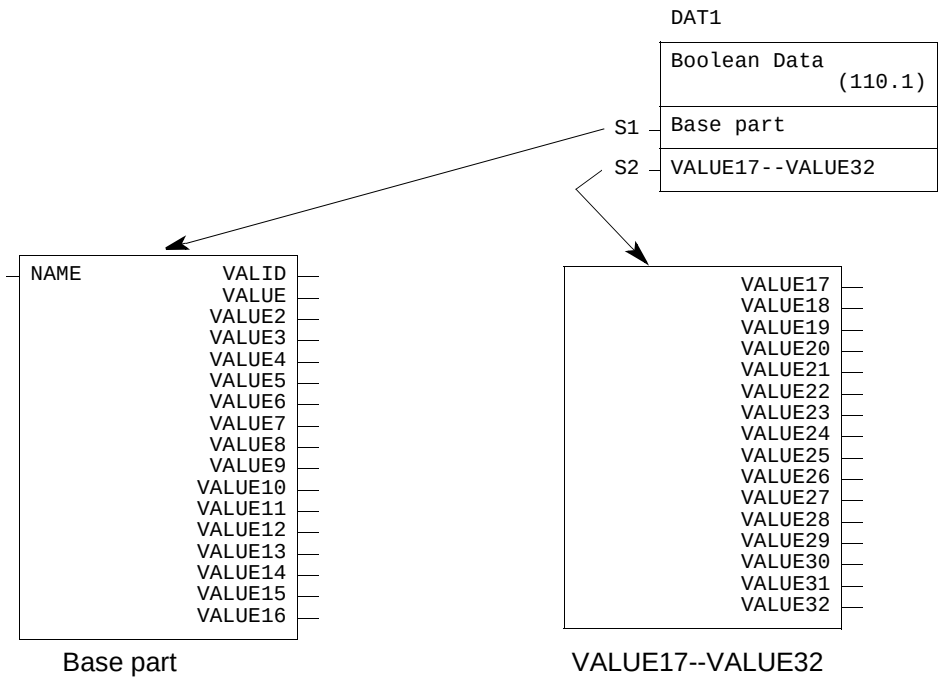
DAT(B) Binary or boolean (32 binary bits or boolean flag treated individually)

DAT(I) Integer in the range –32768..32767

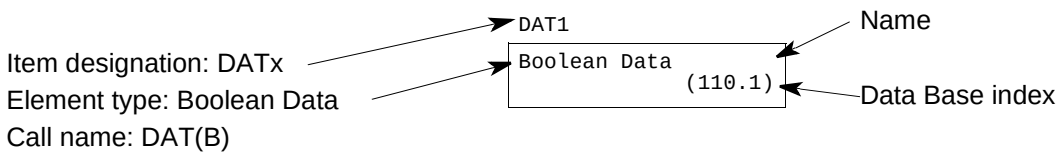
DAT(IL) Integer in the range –2147483648..2147483647

DAT(R) Real value.

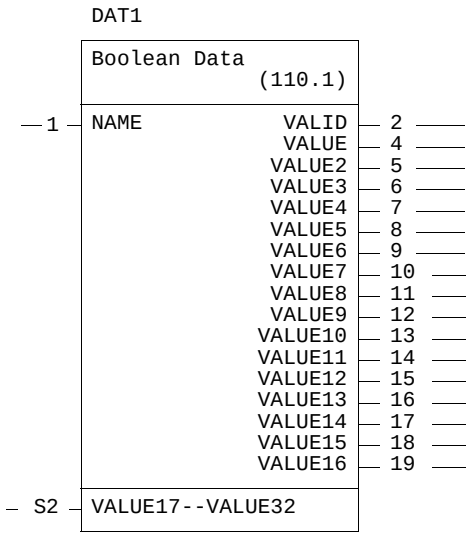
Overview



Head



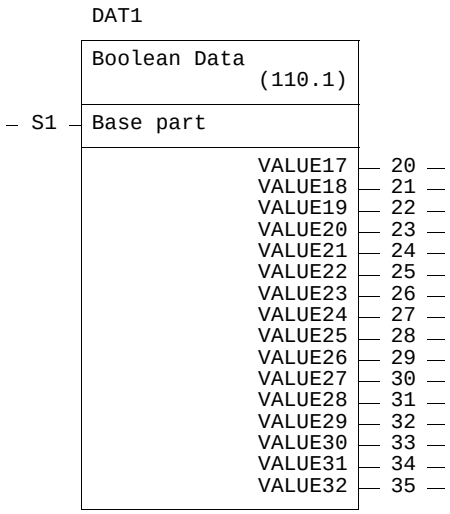
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	*	A12(r/w)	Default **NAME** from superior Data Set element. When created independently, default NAME is DATx. Max. 12 characters, spaces not allowed.	If the Data Set element is called ”FORMULA”, and as this element is the first boolean it will be called FORMULA.B1.
2	VALID	system	0	B(r/w)	**VALID**. Is 0 when created and set to 1 by program entering a value.	Set by ExCom and Data Set Communication of successful write operation.
4	VALUE	system (PC)	0	B(r/w)	16 boolean **VALUE**s handled individually. VALUE can be reached with the short notation DB=DAT1.VALUE2..VALUE16 are connected with the general notation DB=DAT1:VALUE16. etc.	VALUE is the default when connecting from PC.
5	VALUE2	system (PC)	0	B(r/w)		
:	:	:	:	:		
19	VALUE16	system (PC)	0	B(r/w)		

VALUE17--VALUE32

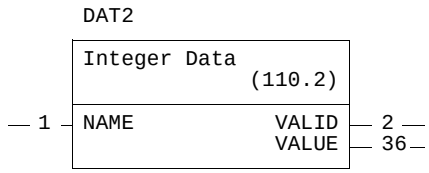


Terminal Description, VALUE17--VALUE32

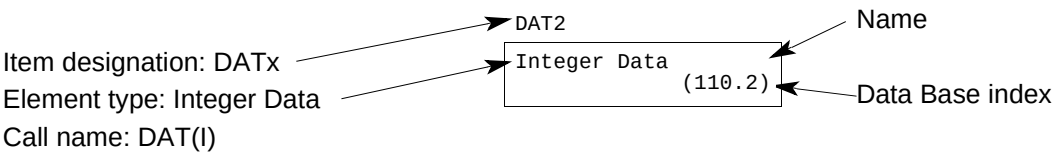
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
20	VALUE17	system (PC)	0	B(r/w)	16 boolean **VALUE**s handled individually. VALUE can be reached with the short notation DB=DAT1.VALUE17..VALUE32 are connected with the general notation DB=DAT1:VALUE17. and so on.	VALUE is the default when connecting from PC.
21	VALUE18	system (PC)	0	B(r/w)		
:	:	:	:	:		
35	VALUE32	system (PC)	0	B(r/w)		

Data (Integer Data) DAT(I)

Overview



Head

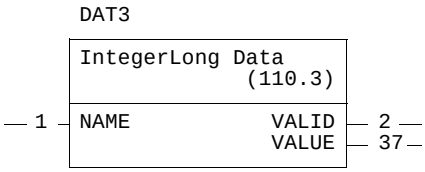


Terminal Description

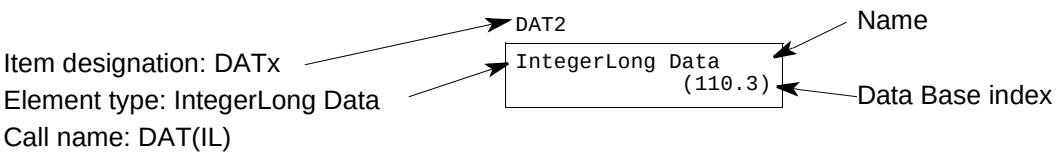
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	*	A12(r/w)	Default **NAME** from superior Data Set element. When created independently, default NAME is DATx. Max. 12 characters, spaces not allowed.	If the Data Set element is called ”FORMULA”, and as this element is the first integer it will be called FORMULA.I1.
2	VALID	system	0	B(r/w)	**VALID**. Is 0 when created and set to 1 by program entering a value.	Set by ExCom and Data Set Communication of successful write operation. Set to zero by Data Set Communication if data has not been received within 3×SCAN_FTR (of the Data Set element). Not set to zero by ExCom.
36	VALUE	system (PC)	0	I(r/w)	One integer **VALUE** in the range –32768..+32767.	–

Data (IntegerLong Data) DAT(IL)

Overview



Head

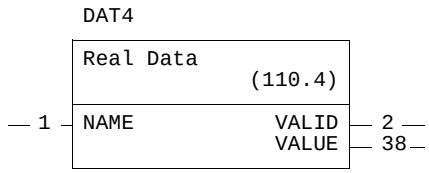


Terminal Description

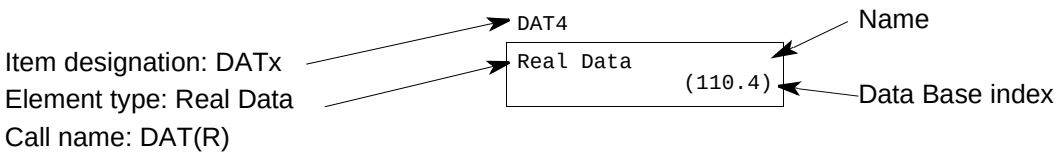
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	*	A12(r/w)	Default **NAME** from superior Data Set element. When created independently, default NAME is DATx. Max. 12 characters, spaces not allowed.	If the Data Set element is called ”FORMULA”, and this element is the first long integer, it will be called FORMULA.IL1
2	VALID	system	0	B(r/w)	**VALID**. Is 0 when created and set to 1 by program entering a value.	Set by ExCom and Data Set Communication of successful write operation. Set to zero by Data Set Communication if data has not been received within 3×SCAN_FTR (of the DATA Set element). Not set to zero by ExCom.
37	VALUE	system (PC)	0	IL(r/w)	One integer long **VALUE** in the range –2147483648..+2147483647.	–

Data (Real Data) DAT(R)

Overview



Head



Terminal Description

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	user	*	A12(r/w)	Default **NAME** from superior Data Set element. When created independently, default NAME is DATx. Max. 12 characters, spaces not allowed.	If the Data Set element is called ”FORMULA”, and this element is the first real value, it will be called FORMULA.R1.
2	VALID	system	0	B(r/w)	**VALID**. Is 0 when created and set to 1 by program entering a value.	Set by ExCom and Data Set Communication of successful write operation. Set to zero by Data Set Communication if data has not been received within 3×SCAN_FTR (of the Data Set element). Not set to zero by ExCom.
38	VALUE	system (PC)	0	R(r/w)	One real **VALUE**.	–

Creation and Deletion of Elements

When you create a Data Set element the system will automatically create an appropriate number of DAT elements of each type needed.

When you delete a DAT element you must make sure that no connection of the element is in use by PC program, MasterView 320 and DS. Should you delete a DAT element before deleting its references in an active Data Set element, an error condition occurs. You now have to enter the Data Set element. On the reference line you will be given a message. You have to delete or change the reference before ending.

VALID Flag

VALID is set for the DS element and its DAT elements when proper data is received. When used with Data Set Communication, VALID is cleared if no data is received within the time-out of SCAN_FTR.

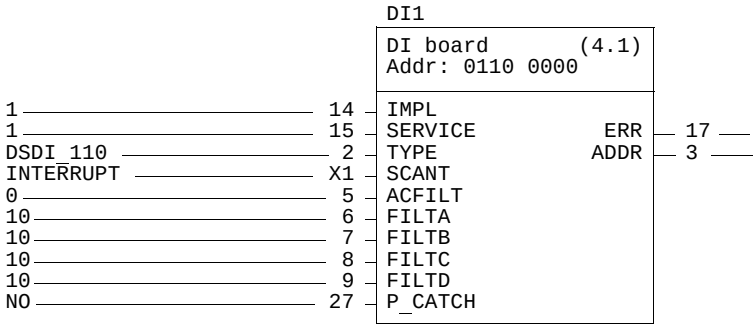
When used with ExCom, VALID is not automatically cleared. Instead VALID in DAT elements can be reset by PC to obtain ”Data used”, ”Time-out” or similar functions.

DI board DI

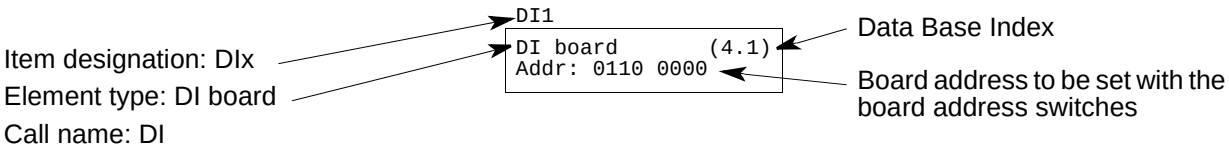
Summary

The DI board data base element holds the data values of the terminals associated to a standard digital input board. The element is superior to the signal elements associated to the digital input channels in the board.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
14	IMPL	user	1	B(r)	0=the board is spare 1=the board is **IMPL**emented	–
15	SERVICE	user, dialog	1	B(r/w)	The in-**SERVICE** terminal controls/ shows whether the board is in service or has been taken out of service.	–
2	TYPE	user	DSDI_ 110	–	Board **TYPE**: DSDI_110, DSDI_115, DSDI_120, DSDI_125, DSDI_131, and DSDI_141.	TYPE must be selected when creating the element.

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
X1	SCANT	user	INTERRUPT	–	**SCANT**ime. See Introduction, ”Allowed SCANT-values”. See also “4. Scantime selection” in “Board set-up procedure” following this table.	–
5	ACFILT	user	0	B(r)	**ACFILT**er. ACFILT=1 changes FILTn characteristics: FILTn=0 to 63 implies a filtering time of 0 to 63 ms for signal transition 0 to 1 and of 0 to 127 ms for 1 to 0. The FILTn value range is limited to 0 - 63 ms in this case. Suitable for AC-signals.	ACFILT=1 requires P_CATH=No.
6	FILTA	user	10	–	**FILT**er time = duration of a signal value change before acceptance. Value range is 0 - 127 ms. Valid for signal transition 0 to 1 and 1 to 0. Operates on a first group of 8 channels, if TYPE=DSDI_110, DSDI_120, DSDI_131 and DSDI_141.	See also under ACFILT and P_CATCH.
7	FILTB	user	10	–	Same as FILTA but for a second group of 8 channels.	See also under ACFILT and P_CATCH.
8	FILTC	user	10	–	Same as FILTA but for a third group of 8 channels.	See also under ACFILT and P_CATCH.
9	FILTD	user	10	–	Same as FILTA but for a fourth group of 8 channels.	See also under ACFILT and P_CATCH.
27	P_CATCH	user	NO	B(r)	YES changes FILTn characteristics if TYPE=DSDI_110 or DSDI_120: • FILTn=0 to 126 implies a filtering time of 0 to 2530 ms for signal transition 0 to 1 and of 0 to 5060 ms for 1 to 0. • FILTn=127 implies a filtering time of 100 ms for signal transition 0 to 1 and of 2000 ms for 1 to 0.	P_CATCH=YES requires ACFILT=0.
17	ERR	system	–	B(r)	**ERR**or flag indicating non-functional board. 1=hardware or configuration error.	–
3	ADDR	system	–	–	Board location within the I/O **ADDR**ess range, presented in decimal format.	Cannot be changed.

Hardware Function

The process signal lines are connected in the connection unit. This unit contains overvoltage protection and fuses. Different boards have different electrical terminals (for example different signal levels and adaptation to AC or DC current). Galvanic isolation is provided by optocoupled inputs.

A microprocessor on the board reads the inputs at about 1 ms scanning rate, handles filtering and puts the filtered value in a register.

If selected, the microprocessor also gives the system processor an interrupt and stores a time tag ”telegram”, 9 such time tag telegrams can be queued for handling in the system processor.

A red LED indicates a fault or un-initialized board. Yellow LED's indicate the state of the output registers.

Address selection: The address to be set is given in the head of the data base element.

Example: The first digital input board is located at hexadecimal address 60=0110 0000.

For board data and strappings, please refer to the manuals *Advant Controller 410 User’s Guide* and *Advant Controller 450 User’s Guide*.

Board Set-up Procedure

The board set-up includes:

1. Implementation
2. Disabling
3. Board type selection
4. Scantime selection
5. Error handling.

1. Implementation

During system INIT the board and its signals are included in the tables that define the process communication. If you set IMPL=0, the board, and the channels associated with it, are removed from the PDC’s tables. Scanned boards are removed at the next scan.

2. Disabling

From Advant Station 500 Series Operator Station you can disable and later enable a board, using the status information dialog. This saves some but not all CPU-load.

If Advant Station 500 Series Operator Station is included in your system: see the Advant Station 500 Series Operator Station manuals.

3. Board type selection

The full name of the board, including "_" must be entered. TUPE must be selected when creating the element. Please note that version designation is omitted when you enter board type. For example, DSDI 110AV1 is to be entered as DSDI_110.

Once created, a board type can be changed if the new board type has the same number of channels as the old one. Please note that a DSDI_110 or DSDI_120 board may be exchanged for a DSDI_115, 116, 125 or 126 board only if the board has been scanned.

4. Scantime selection

The board may work in either interrupt mode or scanning mode as specified by SCANTime. In interrupt mode there is no load on the system CPU unless an input is changing state.

When an input is changing often, the load is lower using scanned mode with appropriate scan-time.

5. Error handling

The ERR terminal is set in DI board data base element, if the board is determined non-functional by the control function.

Indicated errors are non-existent, malfunctioning or improperly strapped hardware or software or data base errors.

The ERR terminal can be connected to the PC program for the desired function.

ERR is reset, if hardware error, automatically within 5 seconds of replacement of the board.

The fault lamp on the board is lit when ERR is set (if the CPU still has access to the board).

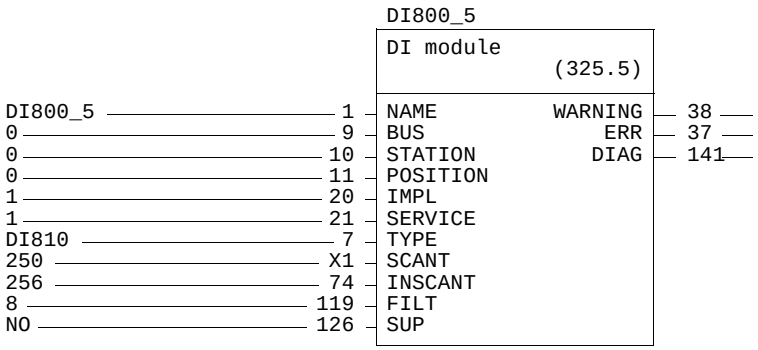
DI module DI81x, DI82x

Summary

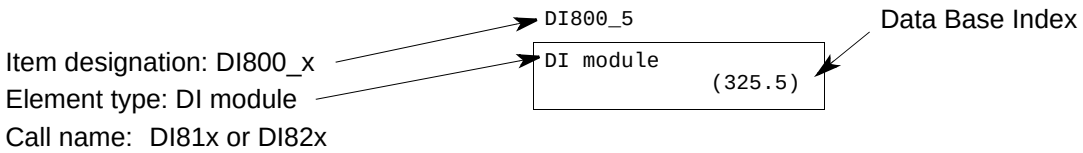
The DI module data base element specifies a Digital Input hardware module inserted in an S800 I/O station. The data base element is superior to the signal elements associated to the digital input channels in the module. The following Digital Input modules are supported:

- DI810: 16 channels with 24 V DC. Isolation: 2 groups of 8. Rated isolation voltage 50 V.
- DI811: 16 channels with 48 V DC. Isolation: 2 groups of 8. Rated isolation voltage 50 V.
- DI814: 16 channels with 24 V DC. Current source. Rated isolation voltage 50 V.
- DI820: 8 channels with 120 V AC. Individual isolation. Rated isolation voltage 250 V.
- DI821: 8 channels with 230 V AC. Individual isolation. Rated isolation voltage 500 V.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DI800_x	–	Unique **NAME** of the I/O module.	Maximum 20 characters.
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	
20	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	DI810x/ DI811/ DI814/ DI820/ DI821	–	Module **TYPE** designation: DI810, DI811, DI814, DI820, or DI821	–
X1	SCANT	user	250	–	Allowed **SCAN T**ime values can be found in Introduction, “Allowed SCANT values”.	–
74	INSCANT	user	256	–	Fieldbus **IN**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–
119	FILT	user	8	–	On/off delay **FILT**er time in ms: 2 ms, 4, 8 and 16. The signal delay time may vary in the following intervals: **2**..3 ms, **4**..6 ms, **8**..12 ms and **16**..24 ms.	–
126	SUP	user	NO	–	Sensor power **SUP**ervision: YES=enabled NO=not enabled	–
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
141	DIAG	system	–	I(r)	**DIAG**nostics.	See section “S800 I/O module DIAG terminal” in the Introduction.

Function

The process signal lines are connected in the termination unit. Galvanic isolation is provided by optocoupled inputs.

An ASIC on the module reads the inputs at 1 ms scanning rate, handles filtering and puts the filtered value in a register.

A red F (Fault) LED indicates a fault or un-initialized module, a green R (Run) LED indicates module in operational mode and a yellow W (Warning) LED indicates warning (error at same channel).

Yellow LED's indicate the state of the input signals.

Refer to the manuals *S800 I/O User's Guide* for more detailed information regarding the module.

Termination Units for the DI modules

Module	Termination Units
DI810, DI811, DI814	TU810, TU812, TU814, TU830, TU838
DI820, DI821	TU811, TU831

Module Set-up Procedure

With the data base element you set up the module for the process communication.

The module set-up includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of INSCANT
5. Selection of filter time
6. Selection of sensor power supervision
7. Error handling.

1. Implementation

During system INIT the module and its signals are included in the tables that define the process communication. If you set IMPL=0 on the module, the module and the channels associated with it are removed from the process communication tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation, to avoid unnecessary system messages. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system

3. Selection of address (BUS, STATION, POSITION) terminals

How to select the address terminals BUS, STATION and POSITION can be found in section “Address terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.

4. Selection of INSCANT

The INSCANT terminal defines the cycle time to be used on Advant Fieldbus 100 to receive the input value from the I/O station to the AC 400 Series Controller. The selection of cycle time (INSCANT) shall be chosen with care due to bus bandwidth. The maximum load on AF 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User's Guide*. The following table describes the load generated by the DI module for all available cycle times:

Generated AF 100 load in percent at different cycle times on INSCANT

1ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
8.800	4.400	2.200	1.100	0.550	0.275	0.138	0.069	0.034	0.017	0.009	0.004	0.002

5. Selection of filter time

The filter should be used to avoid “bounce” from switches.

6. Selection of sensor power supervision

DI810/DI811/DI814 has two separate inputs for sensor power supervision. One for channel 1 to 8 and one for channel 9 to 16.

DI820/DI821 has no separate channels for sensor power supervision. Instead can channel 1 and 8 be used as inputs for sensor power supervision. Channel 1 for channel 2 to 4 and channel 8 for channel 5 to 7.

7. Error Handling

The ERR terminal is set in the DI module element, if the module is determined non-functional, by the control function. Indicated errors are non-existent hardware, malfunctioning, wrong module type, software or data base errors. The ERR terminal can be connected to the PC program for desired function. ERR is reset, at hardware errors, automatically after replacement of the faulty module.

The DIAG terminal provides for a more specific information about the I/O module diagnostics, see section “S800 I/O module DIAG terminal” in the Introduction.

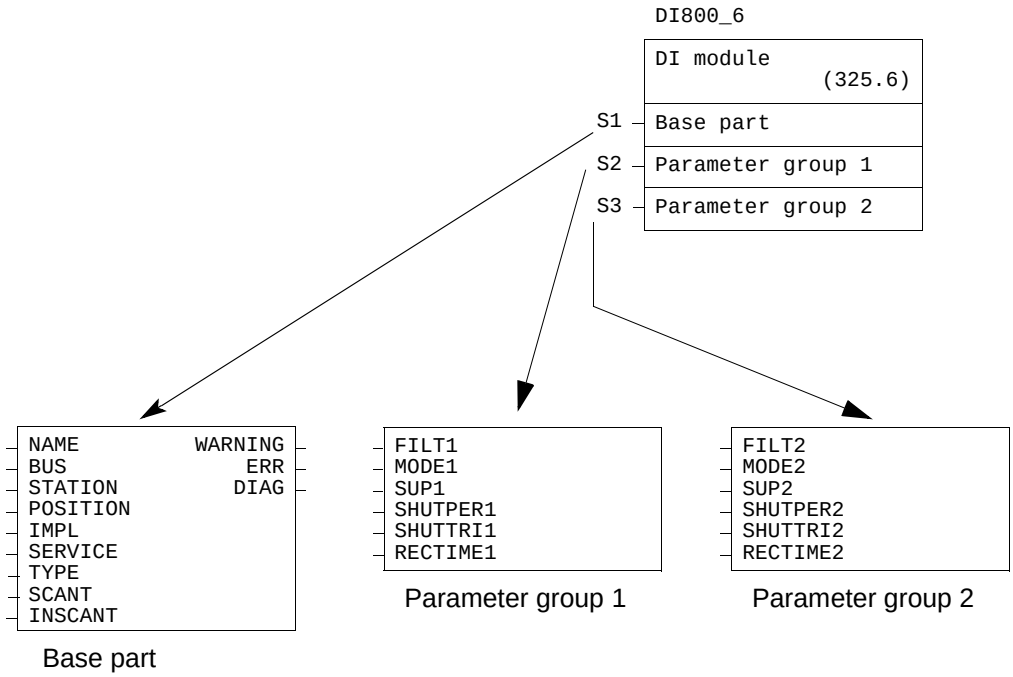
DI module DI83x

Summary

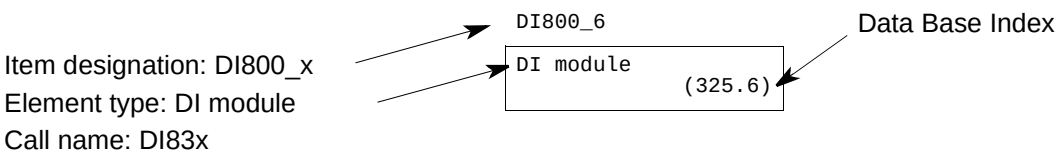
The DI module data base element specifies an Digital Input hardware module with SOE (Sequence Of Event) functionality inserted in an S800 I/O station. The data base element is superior to the signal elements associated to the digital input channels in the module. The following Digital Input modules are supported:

- DI830: 16 channels with 24V and SOE.
- DI831: 16 channels with 48V and SOE.

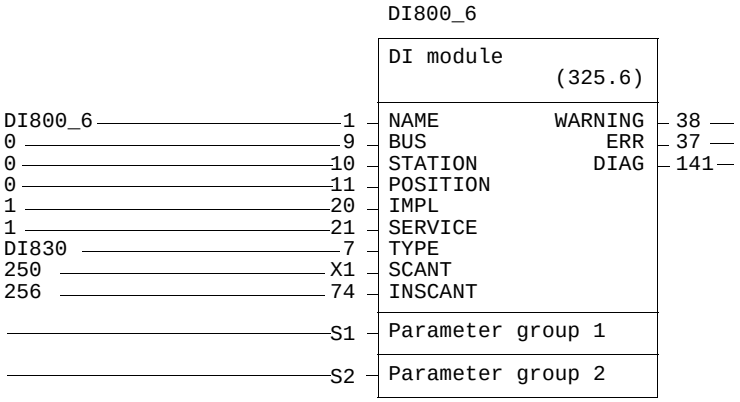
Overview



Head



Base part



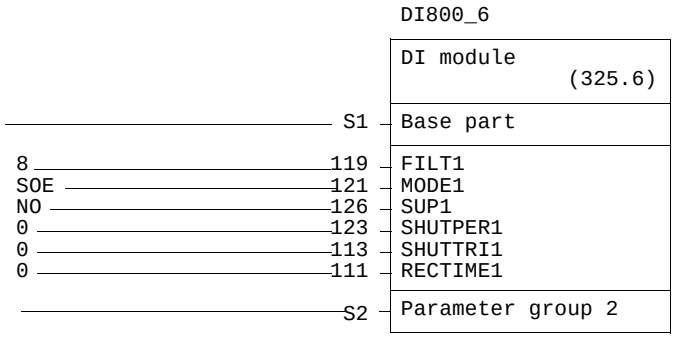
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DI800_x	–	Unique **NAME** of the I/O module.	Maximum 20 characters.
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	
20	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	DI830/ DI831	–	Module **TYPE** designation: DI830, DI831.	–
X1	SCANT	user	250	–	Allowed **SCAN T**ime values can be found in Introduction, “Allowed SCANT values”.	–
74	INSCANT	user	256	–	Fieldbus **IN**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
141	DIAG	system	–	I(r)	**DIAG**nostics.	See section “S800 I/O module DIAG terminal” in the Introduction.

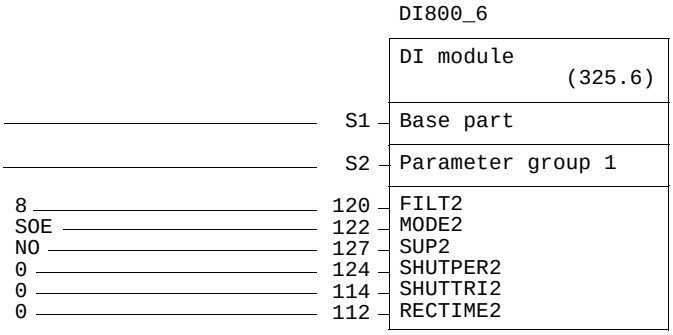
Parameter group 1



Terminal Description, Parameter group 1

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
119	FILT1	user	8	–	On/off delay **FILT**er time in ms: 2 ms, 4, 8 and 16. The signal delay time may vary in the following intervals: **2**..3 ms, **4**..6 ms, **8**..12 ms and **16**..24 ms.	–
121	MODE1	user	SOE	–	Operation **MODE**: DI=sequence of events is not enabled SOE=sequence of events is enabled	–
126	SUP1	user	NO	–	Sensor power **SUP**ervision: YES=enabled NO=not enabled	–
123	SHUTPER1	user	0	–	**SHUT**ter **PER**iod in seconds.	0..255
113	SHUTTRI1	user	0	–	**SHUT**ter **TRI**ggering. Number of events to be detected during shutter period to activate the filter.	0..255
111	RECTIME1	user	0	–	**REC**overy **TIME** in seconds.	0..65535

Parameter group 2



Terminal Description, Parameter group 2

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
120	FILT2	user	8	–	On/off delay **FILT**er time in ms: 2 ms, 4, 8 and 16. The signal delay time may vary in the following intervals: **2**..3 ms, **4**..6 ms, **8**..12 ms and **16**..24 ms.	–
122	MODE2	user	SOE	–	Operation **MODE**: DI=sequence of events is not enabled SOE=sequence of events is enabled	–
127	SUP2	user	NO	–	Sensor power **SUP**ervision: YES=enabled NO=not enabled	–
124	SHUTPER2	user	0	–	**SHUT**ter **PER**iod in seconds.	0..255
114	SHUTTRI2	user	0	–	**SHUT**ter **TRI**ggering. Number of events to be detected during shutter period to activate the filter.	0..255
112	RECTIME2	user	0	–	**REC**overy **TIME** in seconds.	0..65535

Function

DI830/DI831 contains 16 24/48 V digital input channels with SOE (Sequence of Event) functionality. The time stamp of events has a resolution of 0.3 millisecond.

The process signal lines are connected in the termination unit. Galvanic isolation is provided by optocoupled inputs.

A red F (Fault) LED indicates a fault or un-initialized module, a green R (Run) LED indicates module in operational mode and a yellow W (Warning) LED indicates warning (error at same channel).

Yellow LED's indicate the state of the input signals.

Refer to the manuals *S800 I/O User's Guide* for more detailed information regarding the module.

Termination Units for the DI modules

Module	Termination Units
DI830, DI831	TU810, TU812, TU814, TU830, TU838

Module Set-up Procedure

With the data base element you set up the module for the process communication.

The module set-up includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of INSCANT
5. Selection of filter time
6. Selection of sensor power supervision
7. Error handling
8. Operation mode
9. Shutter filter.

1. Implementation

During system INIT the module and its signals are included in the tables that define the process communication. If you set IMPL=0 on the module, the module and the channels associated with it are removed from the process communication tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation, to avoid unnecessary system messages. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system

3. Selection of address (BUS, STATION, POSITION) terminals

How to select the address terminals BUS, STATION and POSITION can be found in section "Address terminals BUS, STATION, POSITION and SUBPOS" in the Introduction.

4. Selection of INSCANT

The INSCANT terminal defines the cycle time to be used on Advant Fieldbus 100 to receive the input values from the I/O station to the AC 400 Series Controller. The selection of cycle time (INSCANT) shall be chosen with care due to bus bandwidth.

The maximum load on AF 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User's Guide*. The following table describes the load generated by the DI module for all available cycle times:

Generated AF 100 load in percent at different cycle times on INSCANT

1ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
8.800	4.400	2.200	1.100	0.550	0.275	0.138	0.069	0.034	0.017	0.009	0.004	0.002

5. Selection of filter time

The filter could be used to avoid "bounce" from switches.

6. Selection of sensor power supervision

Sensor power supervision can be switched on/off with the terminal SUP.

7. Error Handling

The ERR terminal is set in the DI module element, if the module is determined non-functional, by the control function. Indicated errors are non-existent hardware, malfunctioning, wrong module type, software or data base errors. The ERR terminal can be connected to the PC program for desired function. ERR is reset, automatically after replacement of the faulty module.

The DIAG terminal provides for a more specific information about the I/O module diagnostics, see section "S800 I/O module DIAG terminal" in the Introduction.

8. Operation mode

In DI mode, DI830/DI831 acts like a simple digital input device with sensor power and channel supervision, but without event recording.

In SOE mode, DI830/DI831 can be used as a digital input, with the same function as in DI mode, and for event recording, that is changing signals at the input channels will be recorded in the event queue with a resolution of 1 millisecond.

9. Shutter filter

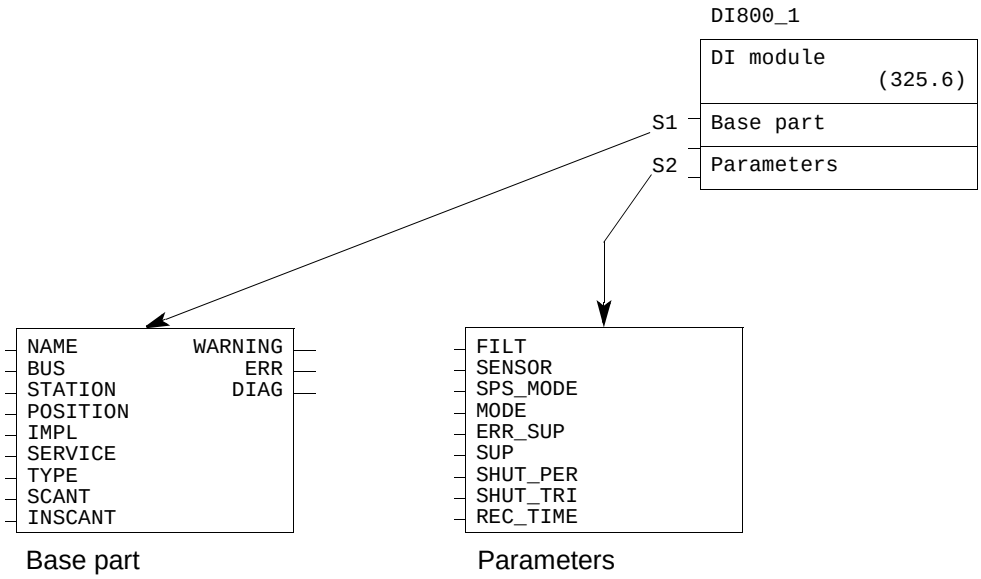
Shutter filter does only affect the SOE function. The filter could be used to reduce the number of events from an input channel to avoid that events from one channel fill up the event queue. The shutter filter is configured with the terminals SHUTPER1, SHUTTRI1 and RECTIME1 resp. SHUTPER2, SHUTTRI2 and RECTIME2.

DI module DI885

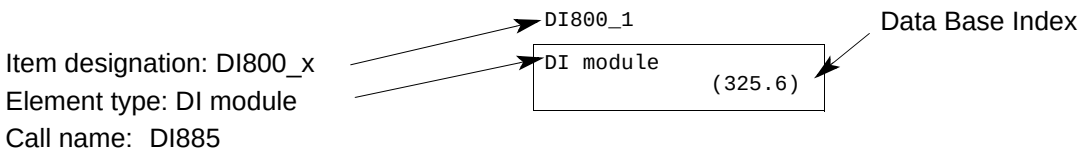
Summary

The DI module data base element specifies a Digital Input hardware module with SOE (Sequence Of Event) functionality inserted in an S800 I/O station. The data base element is superior to the signal elements associated to the digital input channels in the module. The data base element contains diagnostic information of the I/O module.

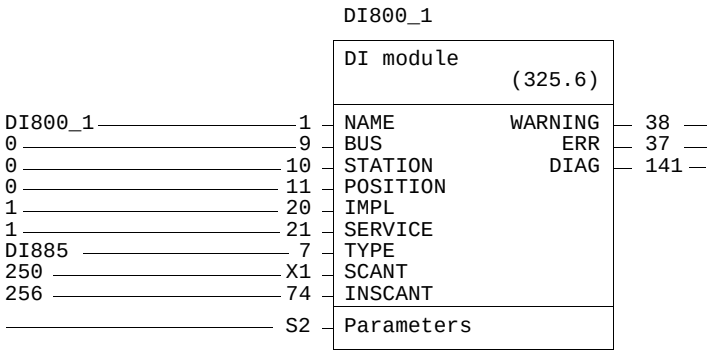
Overview



Head



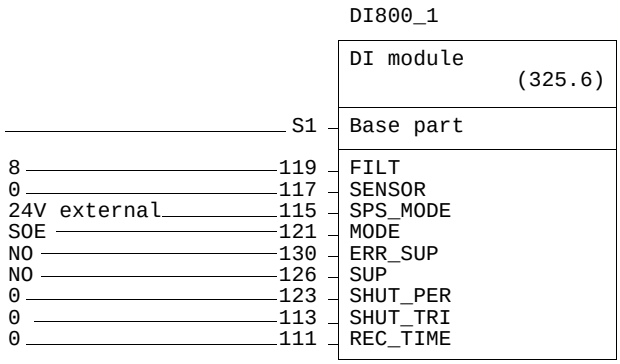
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DI800_x	–	Unique **NAME** of the I/O module.	Maximum 20 characters.
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	
20	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	DI885	–	Module **TYPE** designation.	–
X1	SCANT	user	250	–	Allowed **SCAN T**ime values can be found in Introduction, “Allowed SCANT values”.	–
74	INSCANT	user	256	–	Fieldbus **IN**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
141	DIAG	system	–	I(r)	**DIAG**nostics.	See section “S800 I/O module DIAG terminal” in the Introduction.

Parameters



Terminal Description, Parameters

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
119	FILT	user	8	–	On/off delay **FILT**er time in ms: 0-255.	–
117	SENSOR	user	0	–	**SENSOR** type: 0=contact input 1=electronic input	–
115	SPS_MODE	user	24V external	–	**S**ensor **P**ower **S**upply **MODE**: 48V external, 24V external, 24V internal.	–
121	MODE	user	SOE	–	Operation **MODE**: DI=sequence of events is not enabled SOE=sequence of events is enabled	–
130	ERR_SUP	user	NO	–	**SUP**ervision of channel **ERR**ors: YES=enabled NO=not enabled	–
126	SUP	user	NO	–	Sensor power **SUP**ervision: YES=enabled NO=not enabled	–
123	SHUT_PER	user	0	–	**SHUT**ter **PER**iod in seconds	0..255
113	SHUT_TRI	user	0	–	**SHUT**ter **TRI**ggering. Number of events to be detected during shutter period to activate the filter.	0..255
111	REC_TIME	user	0	–	Shutter filter **REC**overy **TIME** in seconds.	0..65535

Function

DI885 contains eight 24/48 V digital input channels with SOE (Sequence of Event) functionality. The time stamp of events has a resolution of 1 millisecond.

The process signal lines are connected in the termination unit. Galvanic isolation is provided by optocoupled inputs.

A red F (Fault) LED indicates a fault or un-initialized module, a green R (Run) LED indicates module in operational mode and a yellow W (Warning) LED indicates warning (error at same channel).

Yellow LED's indicate the state of the input signals.

Refer to the manuals *S800 I/O User's Guide* for more detailed information regarding the module.

Termination Units for the DI modules

Module	Termination Units
DI885	TU810, TU812, TU814, TU830

Module Set-up Procedure

With the data base element you set up the module for the process communication.

The module set-up includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of INSCANT
5. Selection of filter time
6. Selection of sensor power supervision
7. Error handling
8. Operation mode
9. Shutter filter
10. Selection of sensor power supply
11. Selection of channel supervision
12. Selection of sensor type.

1. Implementation

During system INIT the module and its signals are included in the tables that define the process communication. If you set IMPL = 0 on the module, the module and the channels associated with it are removed from the process communication tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation, to avoid unnecessary system messages. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system

3. Selection of address (BUS, STATION, POSITION) terminals

How to select the address terminals BUS, STATION and POSITION can be found in section “Address terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.

4. Selection of INSCANT

The INSCANT terminal defines the cycle time to be used on Advant Fieldbus 100 to receive the input values from the I/O station to the AC 400 Series Controller. The selection of cycle time (INSCANT) shall be chosen with care due to bus bandwidth. The maximum load on AF 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User's Guide*. The following table describes the load generated by the DI module for all available cycle times:

Generated AF 100 load in percent at different cycle times on INSCANT

1ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
8.800	4.400	2.200	1.100	0.550	0.275	0.138	0.069	0.034	0.017	0.009	0.004	0.002

5. Selection of filter time

The filter could be used to avoid “bounce” from switches.

6. Selection of sensor power supervision

Sensor power supervision can be switched on/off with the terminal SUP.

7. Error Handling

The ERR terminal is set in the DI module element, if the module is determined non-functional, by the control function. Indicated errors are non-existent hardware, malfunctioning, wrong module type, software or data base errors. The ERR terminal can be connected to the PC program for desired function. ERR is reset, automatically after replacement of the faulty module.

The DIAG terminal provides for a more specific information about the I/O module diagnostics, see section “S800 I/O module DIAG terminal” in the Introduction.

8. Operation mode

In DI mode, DI885 acts like a simple digital input device with sensor power and channel supervision, but without event recording.

In SOE mode, DI885 can be used as a digital input, with the same function as in DI mode, and for event recording, that is changing signals at the input channels will be recorded in the event queue with a resolution of 1 millisecond.

9. Shutter filter

Shutter filter does only affect the SOE function. The filter could be used to reduce the number of events from an input channel to avoid that events from one channel fill up the event queue. The shutter filter is configured with the terminals SHUT_PER, SHUT_TRI and REC_TIME.

10. Selection of sensor power supply

Selection of sensor power supply can be done by the terminal SPS_MODE. Sensor power supply can be chosen between 48V external, 24V external and 24V internal.

11. Selection of channel supervision

Selection of channel supervision can be done by the terminal ERR_SUP. The module can supervise the process channels regarding wire brake of sensor cable, missing sensor and short circuit of sensor voltage to ground.

12. Selection of sensor type

Selection of sensor type can be done by the terminal SENSOR. Sensor type can be chosen between contact input or electronic input. Channel supervision is only possible for contacts with a resistor connected in parallel.

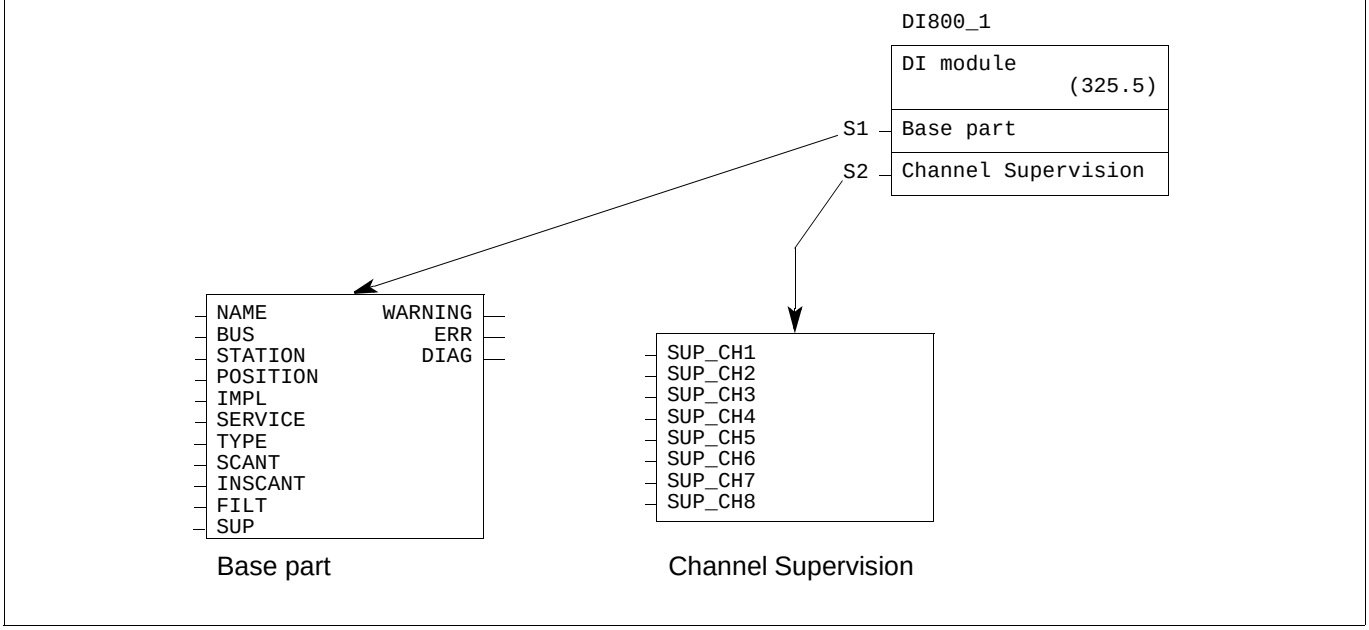
DI module DI890

Summary

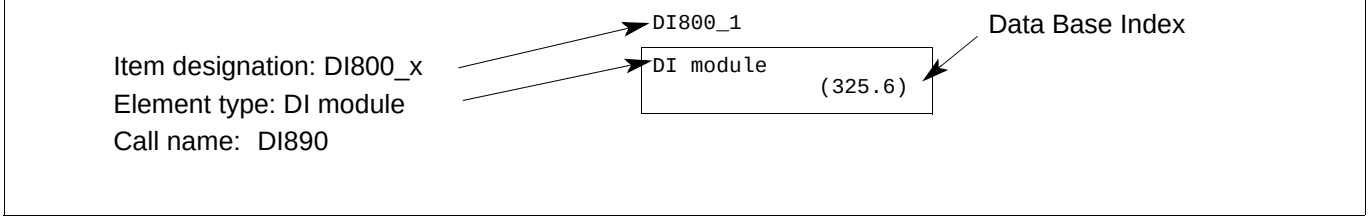
The DI module data base element specifies a Digital Input hardware module Intrinsic Safety Interface inserted in an S800 I/O station. The data base element is superior to the signal elements associated to the digital input channels in the module. The data base element contains diagnostic information of the I/O module.

DI890: 8 channel with Intrinsic Safety interface.

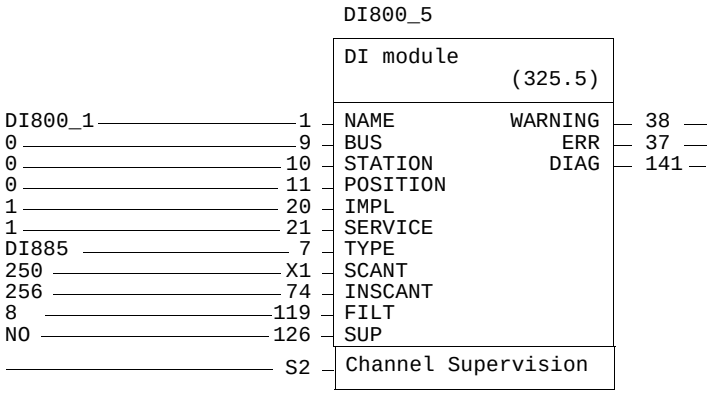
Overview



Head



Base part



Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DI800_x	–	Unique **NAME** of the I/O module.	Maximum 20 characters.
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	
20	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	DI890	–	Module **TYPE** designation: DI890	–
X1	SCANT	user	250	–	Allowed **SCAN T**ime values can be found in Introduction, “Allowed SCANT values”.	–
74	INSCANT	user	256	–	Fieldbus **IN**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–
119	FILT	user	8	-	On/off delay **FILT**er time in ms: 2 ms, 4, 8 and 16. The signal delay time may vary in the following intervals: **2** - 3 ms, **4** - 6 ms, **8** - 12 ms and **16** - 24 ms.	–
126	SUP	user	NO	-	Sensor power **SUP**ervision: YES = enabled NO = not enabled	–
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–

Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
141	DIAG	system	–	I(r)	**DIAG**nostics.	See section “S800 I/O module DIAG terminal” in the Introduction.
144 to 151	SUP_CH#	user	NO	-	Supervision of channel # YES = enabled NO = not enabled	To use channel Supervision sensor power supervision must be enabled.

Function

The process signal lines are connected in the termination unit. Galvanic isolation is provided by transformers.

An ASIC on the module reads the inputs at 1 ms scanning rate, handles filtering and puts the filtered value in a register.

A red F (Fault) LED indicates a fault or un-initialized module, a green R (Run) LED indicates module in operational mode and a yellow W (Warning) LED indicates warning (error at same channel).

Yellow LED's indicate the state of the input signals. Red LED’s indicate channel error.

Refer to the manuals *S800 I/O User’s Guide* for more detailed information regarding the module.

Termination Units for the DI modules

Module	Termination Unit
DI890	TU890

Module Set-up Procedure

With the data base element you set up the module for the process communication.

The module set-up includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of INSCANT
5. Selection of filter time
6. Selection of sensor power supervision
7. Channel supervision
8. Error handling.

1. Implementation

During system INIT the module and its signals are included in the tables that define the process communication. If you set IMPL=0 on the module, the module and the channels associated with it are removed from the process communication tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation, to avoid unnecessary system messages. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system

3. Selection of address (BUS, STATION, POSITION) terminals

How to select the address terminals BUS, STATION and POSITION can be found in section “Address terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.

4. Selection of INSCANT

The INSCANT terminal defines the cycle time to be used on Advant Fieldbus 100 to receive the input value from the I/O station to the AC 400 Series Controller. The selection of cycle time (INSCANT) shall be chosen with care due to bus bandwidth. The maximum load on AF 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User's Guide*. The following table describes the load generated by the DI module for all available cycle times:

Generated AF 100 load in percent at different cycle times on INSCANT

1ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
8.800	4.400	2.200	1.100	0.550	0.275	0.138	0.069	0.034	0.017	0.009	0.004	0.002

5. Selection of filter time

The filter should be used to avoid “bounce” from switches.

6. Selection of sensor power supervision.

One internal sensor power supervision.

7. Channel supervision

A channel wise line fault detection is supported for proximity sensor or voltage free contact. Line fault detection with voltage free contact requires external resistors. To use channel supervision sensor, power supervision must be enabled.

8. Error Handling

The ERR terminal is set in the DI module element, if the module is determined non-functional, by the control function. Indicated errors are non-existent hardware, malfunctioning, wrong module type, software or data base errors. The ERR terminal can be connected to the PC program for desired function. ERR is reset, at hardware errors, automatically after replacement of the faulty module.

The DIAG terminal provides for a more specific information about the I/O module diagnostics, see section “S800 I/O module DIAG terminal” in the Introduction.

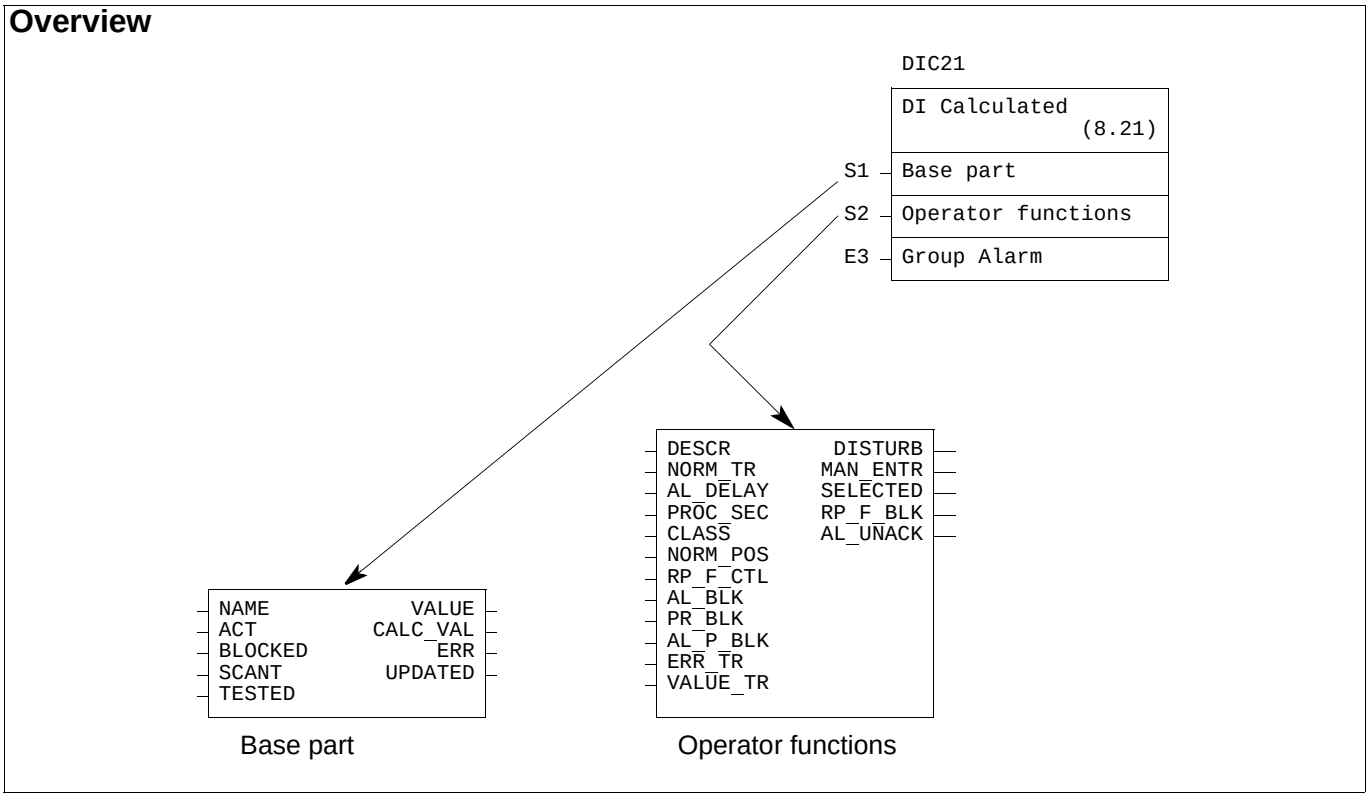
DI Calculated DIC

Summary

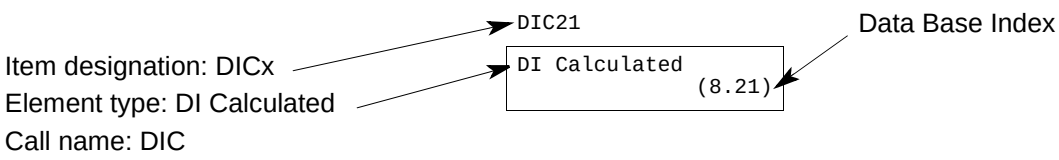
The data values of the DI Calculated data base element defines an internal digital input signal so that the process communication program can treat your calculated signals as if they came from the process. For information about the extension parts of Group Alarm see data base element Group Member.

The main purpose is to supply an interface to Operator functions for signals that do not correspond to physical signals, but have been calculated by the system, usually by PC programs.

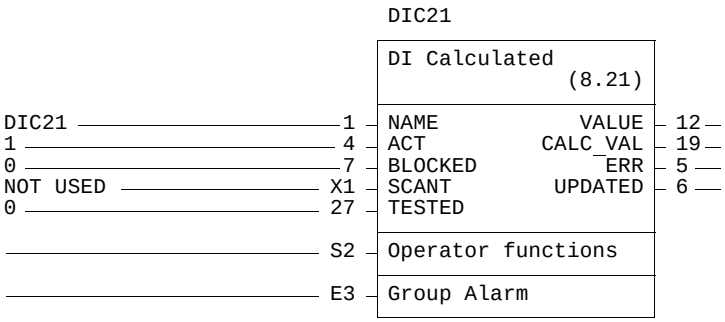
Overview



Head



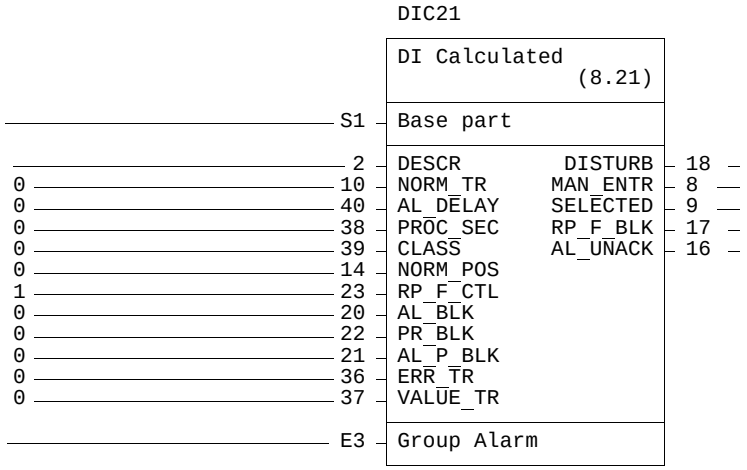
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DICx	–	Each DI Calculated signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
4	ACT	user	1	B(r)	1=the signal is **ACT**ive. 0=the signal is spare.	–
7	BLOCKED	dialog	0	B(r/w)	1=updating of signal value is **BLOCKED**.	–
X1	SCANT	user	NOT USED	–	Not used. **SCAN T**ime determined by PC program connected to CALC_VAL.	–
27	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
12	VALUE	system	–	R(r/w)	Signal **VALUE**.	–
19	CALC_VAL	system	–	R(r/w)	Input connection for the **CALC**ulated **VAL**ue from PC-program.	–
5	ERR	system	–	B(r/w)	1=Configuration **ERR**or.	Can only be reset by correcting the error.
6	UPDATED	system	–	B(r/w)	1=Value has been **UPDATED** since start-up.	Cannot be affected by user.

Operator functions



Terminal Description, Operator functions

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Maximum 20 characters. You may enter any information regarding the signal.
10	NORM_TR	user	0	B(r)	**NORM**al event **TR**eatment in Operator Station.	0=no event driven updating in Operator Station.
40	AL_DELAY	user	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds: 1 - 127.	0 = no delay.
38	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
39	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
14	NORM_POS	user	0	B(r/w)	Normal signal value.	Used for alarm and DISTURBance calculation purposes.
23	RP_F_CTL	user	1	B(r)	Request for reduced number of reports on repetitive alarm in Operator Station.	–

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
20	AL_BLK	dialog	0	B(r/w)	1=**BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
22	PR_BLK	dialog	0	B(r/w)	1=**BL**oc**K**ing of event **PR**intout in Operator Station.	–
21	AL_P_BLK	PC	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K**. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC program.	–
36	ERR_TR	user	0	–	**ERR**or **TR**eatment. Pointer to data base element EVENT_TREAT in Operator Station which defines the event handling of signal errors and operator commands.	Recommended settings: 0=No event reporting 2=Event reporting including alarm handling.
37	VALUE_TR	user	0	–	**VALUE TR**eatment. Pointer to data base element in EVENT_TREAT in Operator Station which defines the event handling of signal value.	Recommended settings: 0=No event reporting 1=Event reporting, no alarm handling. 2=Event reporting incl. alarm handling.
18	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indicating whether a state of alarm exists in element.	Cannot be affected by user.
8	MAN_ENTR	system	–	B(r/w)	1=Flag indicating that the signal VALUE has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	Cannot be affected by user.
9	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–
17	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**lag **BL**oc**K**. Flag indicating that a repeating alarm is present in the element but that the indication has been blocked.	–
16	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	–

Function

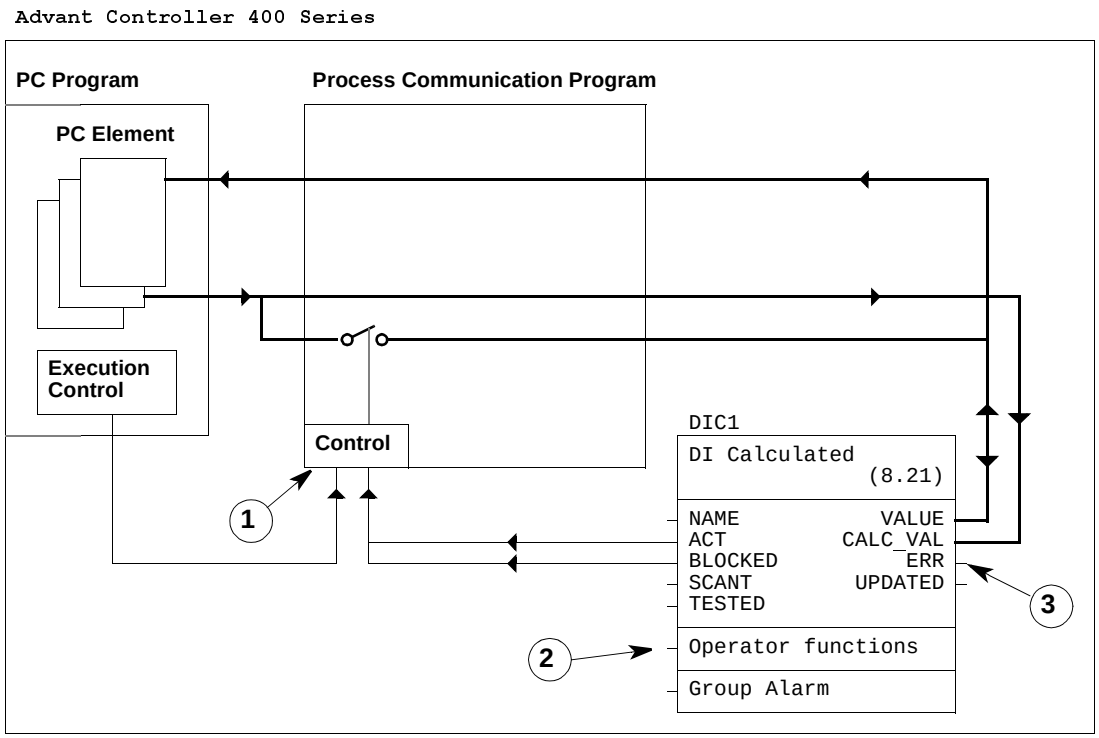
The DI Calculated data base element defines an digital input so that the process communication program can treat calculated signals as if they came from the process. For example, the PC program may calculate a signal from several process signals using a logical expression formed by PC elements, and present it in a DI Calculated data base element so that it looks to the Advant Station 500 Series Operator Station as if it was a true input.

The signal processing controlled by the element includes:

1. Updating
2. Operator Station functions
3. Error handling.

The figure below illustrates this signal handling.

Function of DI Calculated Terminals



1. Updating

PC programs and commands writes to the terminal CALC VAL. If BLOCKED=0 full signal treatment is done including updating of VALUE.

If you set BLOCKED, the data acquisition stops, allowing manual entry of VALUE.

To disable the data acquisition completely, you set ACT=0. This excludes the element from processing.

2. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation.

3. Error handling

The ERR terminal is set for internal errors only.

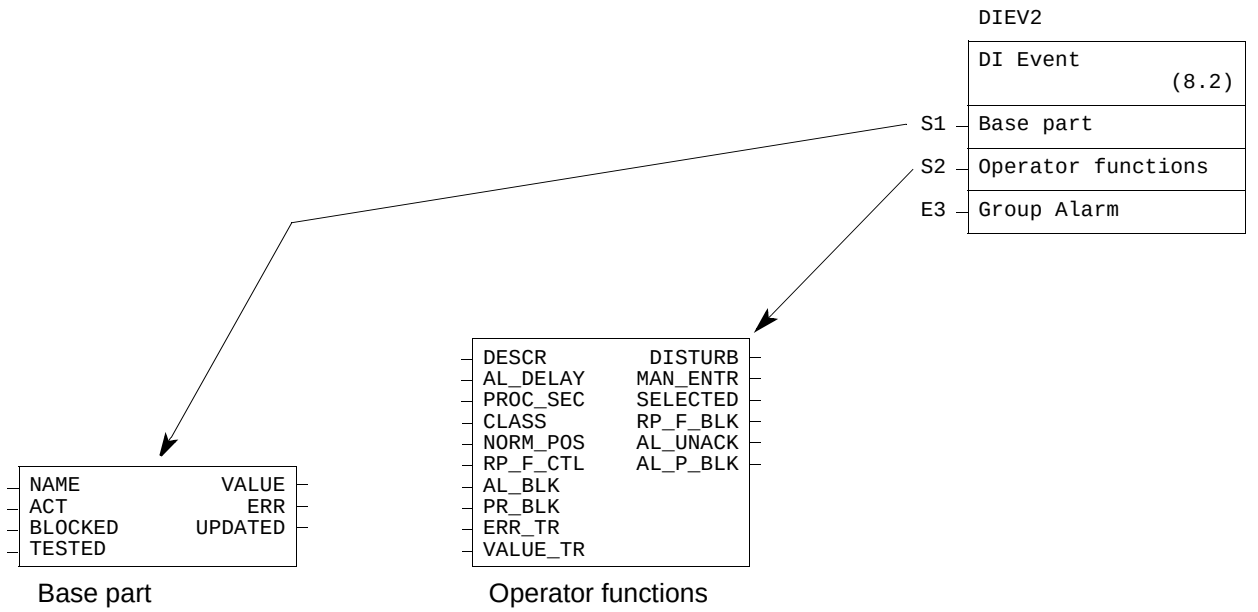
DI Event DIEV

Summary

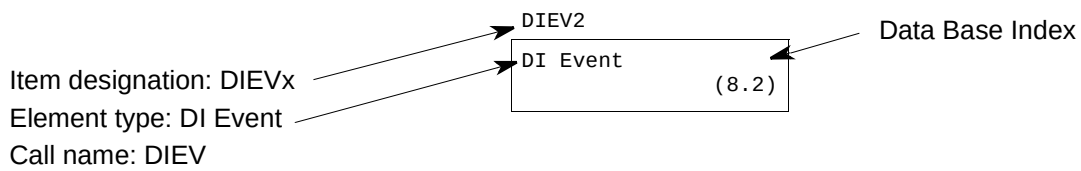
The DI Event data base element main function is to provide for reception of time tagged events from externally connected controllers, for example Advant Controller 110. The process value terminal is not updated by the event set handler. It means that the event and alarm handling is the primary function for the functional unit variant DIEV.

The DI Event can be treated as an ordinary digital input, if the PC application program is built to cyclically receive the externally measured or calculated value. Receiving of the value can be programmed by means of data set communication. Depending on selected communication type (RCOM or Advant Fieldbus 100) between the Advant Controller 400 Series and Advant Controller 110, MS (MVI Data Set communication) or DSP (Data Set Peripheral) can be selected for the data set transfer.

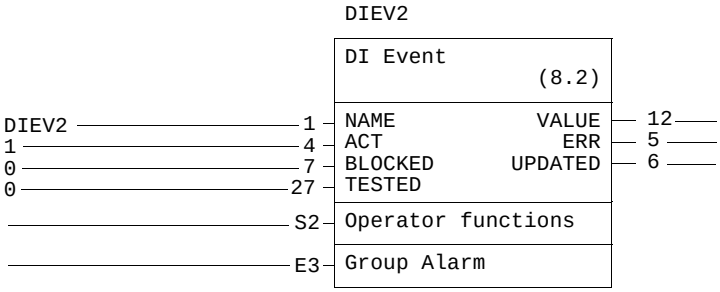
Overview



Head



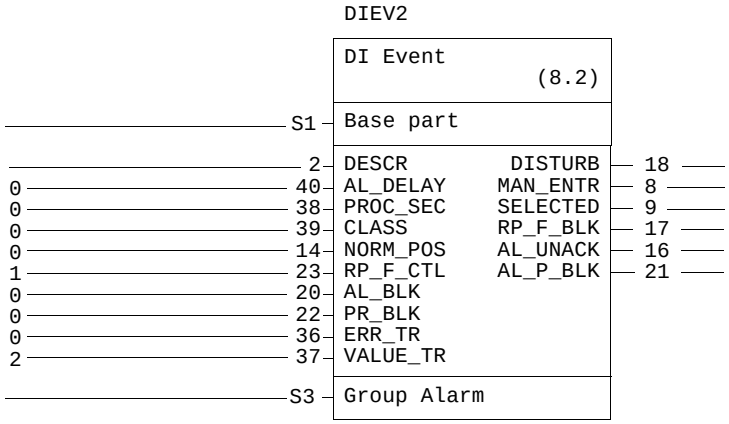
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DIEVx	–	Unique **NAME** of the DI Event signal.	Max. 20 characters.
4	ACT	user	1	B(r)	0=the signal is spare 1=the signal is **ACT**ive	–
7	BLOCKED	dialog	0	B(r/w)	1=updating of signal value is **BLOCKED**.	–
27	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
12	VALUE	PC	0	B(r/w)	Signal **VALUE**.	–
5	ERR	system	–	B(r/w)	1=Configuration **ERR**or.	Can only be reset by correcting the error.
6	UPDATED	PC	0	B(r/w)	1=Value has been **UPDATED** since start-up.	–

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Max. 20 characters. You may enter any information regarding the signal.
40	AL_DELAY	user	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds.	Not used.
38	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists -1=the signal can not be selected and can not be presented in lists.
39	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
14	NORM_POS	user	0	B(r/w)	**NORM**al signal value.	Used for alarm and DISTURBance calculation purposes.
23	RP_F_CTL	user	1	B(r)	**R**e**P**eat **F**ail **C**on**T**ro**L**. Request for reduced number of reports on repetitive alarm in Operator Station.	–
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Max. 20 characters. You may enter any information regarding the signal.

Terminal Description, Operator functions (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
20	AL_BLK	dialog	0	B(r/w)	1=**BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
22	PR_BLK	dialog	0	B(r/w)	1=**BL**oc**K**ing of event **PR**intout in Operator Station.	–
36	ERR_TR	user	0	–	**ERR**or **TR**eatment. Pointer to data base element in EVENT_TREAT in the Operator Station which defines the event handling of signal errors and operator commands.	Recommended settings: 0=no event reporting 2=event reporting including alarm handling.
37	VALUE_TR	user	1	–	**VALUE TR**eatment. Pointer to data base element EVENT_TREAT in the Operator Station which defines the event handling of received events.	Recommended settings: 1=Event handling, no alarm handling 2=Event handling including alarm handling.
18	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indicating whether a state of alarm exists in the element.	Can not be affected by user.
8	MAN_ENTR	system	–	B(r/w)	1=Flag indicating that the signal VALUE has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	Cannot be affected by user.
9	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–
17	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**ail **BL**oc**K**. Flag indicating that a repeating alarm is present in the element but that the indication has been blocked.	–
16	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	–
21	AL_P_BLK	PC	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K**. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC program.	–

Function

The purpose of the DI Event data base element is to provide for reception of events generated by a DI object in an external Controller (for example Advant Controller 110). The Operator functions treats the DIEV signal as an ordinary input signal.

The following signal processing is **NOT** performed by the DI Event data base element:

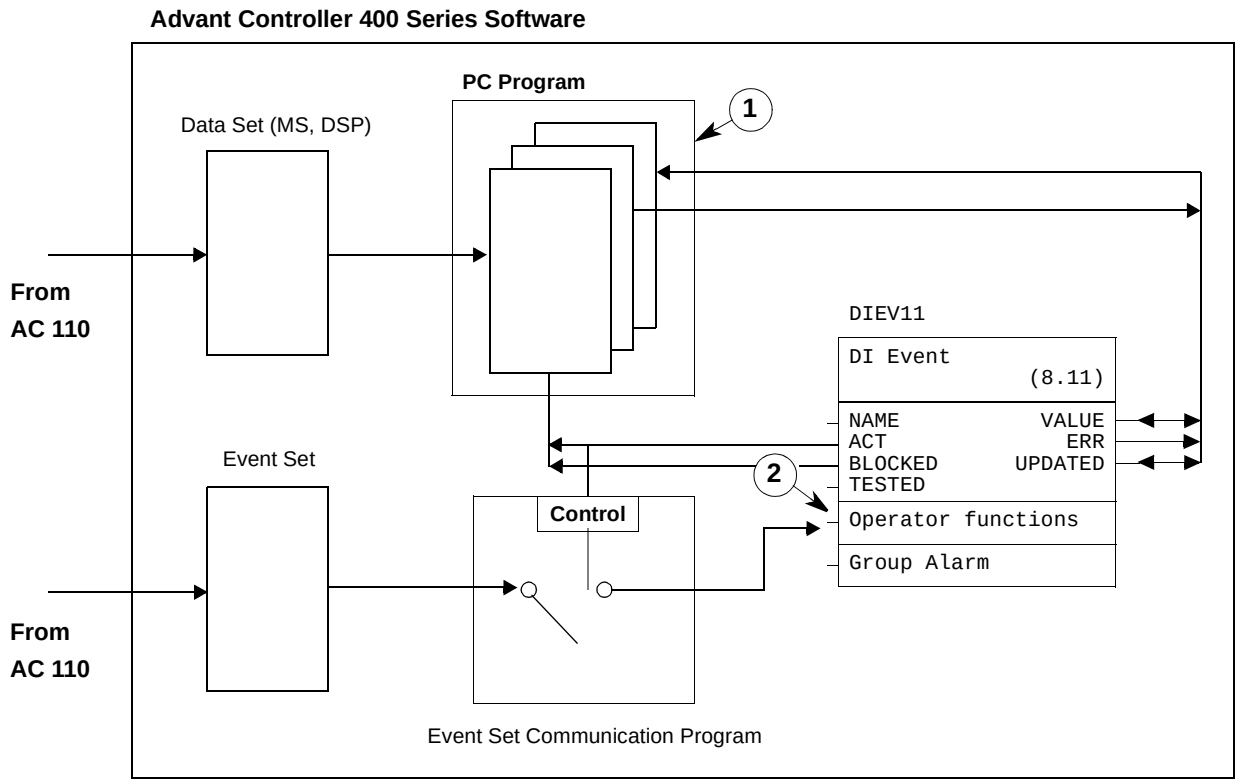
1. Updating.

Signal processing performed by the element is:

2. Event handling.

The figure below illustrates this signal handling.

Function of DIEV Terminals



1. Updating

The VALUE terminal is not updated by the system when receiving external events. It is however possible to make the DI Event behave more or less as a complete DI object with some application programming. The application must use the Data Set Peripheral communication to cyclically receive the value from the corresponding DI Calculated or Digital Input data base element in the Advant Controller 110, and then update the VALUE terminal of the DI Event element.

Terminals to be handled by an application program when making DI Event a more complete DI object

The VALUE terminal is included but are not handled by the system. It provides for a possible update by the application program, by means of cyclic Data Set transfer and a PC application update. The update of the VALUE terminal does not generate an event to the Advant Station 500 Series Operator Station. The events are supposed to come from the external controller via the Event Set communication to which this element is supposed to be connected.

The UPDATED terminal is only reset to 0 at system start up and is after this not handled by the system. The application program is supposed to handle the update of this terminal when updating the VALUE terminal.

It is the application program responsibility to act according to what is specified on the BLOCKED terminal when updating the VALUE terminal. This is not taken care of by the system.

The ACT terminal controls the flow of time tagged events. It does not prevent the PC application program from updating the VALUE of the element, this must be controlled by the PC program itself.

The ERR terminal can be used by the PC application program to indicate erroneous values or other fatal errors.

2. Event handling

As explained above the events are supposed to be generated by an external controller and received by object, if it is connected to the Event Set communication (see Event Set (Receive)). The event handling is an Operator function.

Note that all events are lost (not sent to the Operator Station) when the BLOCKED terminal is set to 1.

To disable the flow of time tagged events completely, you set ACT = 0. This excludes the element from event processing.

Group Alarm

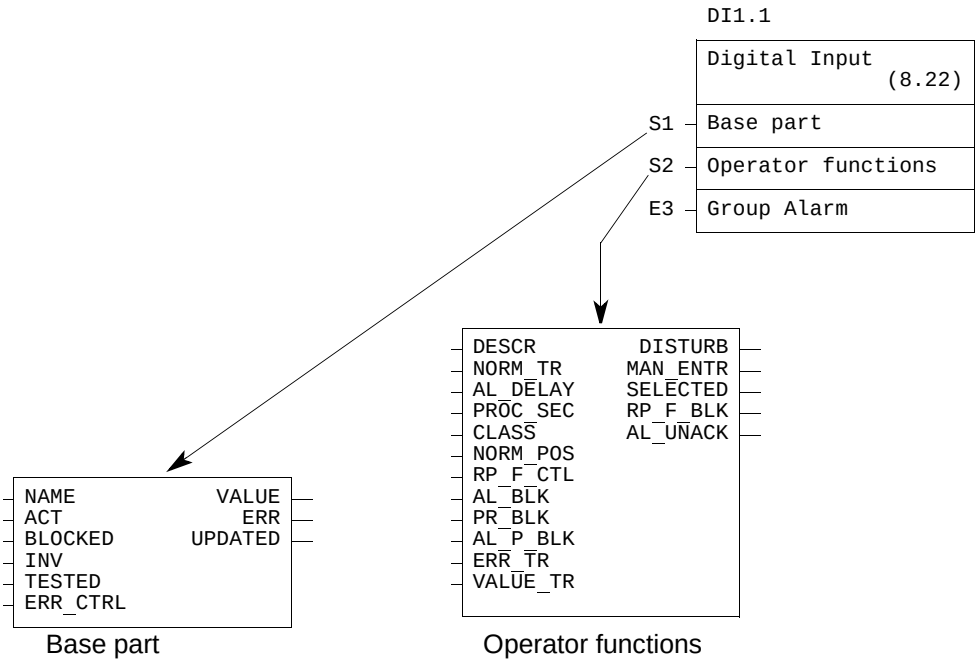
The data base element has a possibility to connect event signals, received via the event transfer function of Advant Fieldbus 100, LONWORKS Network or RCOM, to Group Alarm. Since it is very difficult (sometimes impossible) to guarantee correct order of coming and going alarms, which is necessary for the group alarm function, the recommendation is **not to use the connection to Group Alarm**.

Digital Input DIS, DIXS

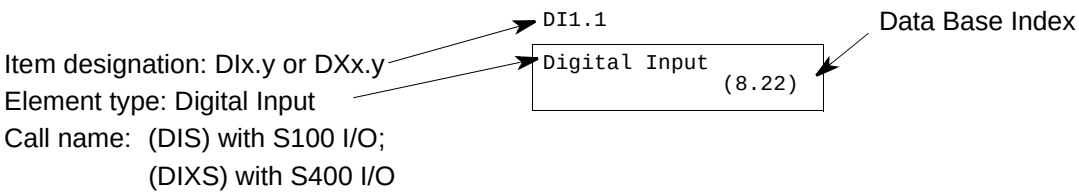
Summary

The Digital Input data base element holds the data values of the terminals associated to a standard digital input channel. The element is subordinate to the DI board or the DX unit data base element. For information about the extension part of Group Alarm see data base element Group Member.

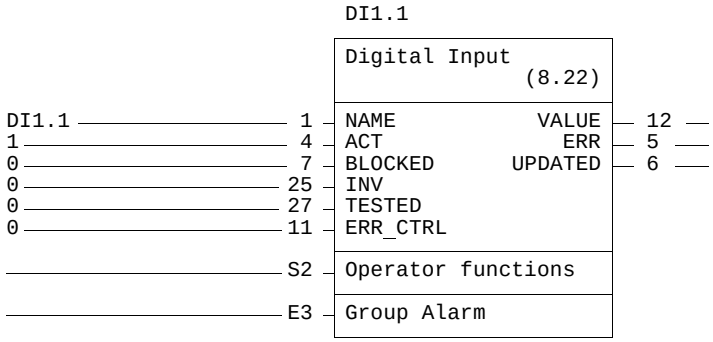
Overview



Head



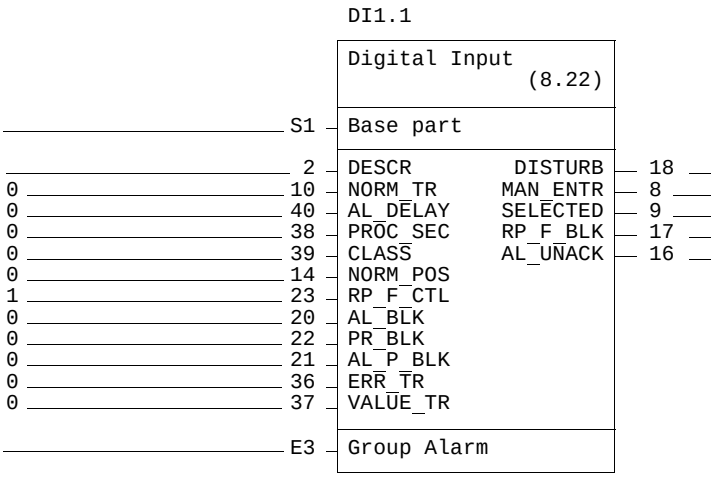
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DIx.y *or* DXx.y	–	Each Digital Input signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
4	ACT	user	1	B(r)	1=the signal is **ACT**ive. 0=the signal is spare.	–
7	BLOCKED	dialog	0	B(r/w)	1=updating of signal value is **BLOCKED**.	–
25	INV	user	0	B(r/w)	1=the signal value is **INV**erted.	–
27	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
11	ERR_CTRL	user	0	B(r)	**ERR**or **C**on**TR**o**L**. 0=Value is frozen when error occurs. 1=Value is set to the inverted value of NORM_POS when error occurs.	–
12	VALUE	system	–	B(r/w)	Signal **VALUE**.	–
5	ERR	system	–	B(r/w)	1=hardware or configuration **ERR**or.	–
6	UPDATED	system	–	B(r/w)	1=system indicates that VALUE has been **UPDATED**.	Cannot be affected by user.

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Maximum 20 characters. You may enter any information regarding the signal.
10	NORM_TR	user	0	B(r)	1=**NORM**al event driven updating on displays and lists in Operator Station.	0=no event driven updating in Operator Station.
40	AL_DELAY	user	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds: 1 - 127.	0 = no delay.
38	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
39	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station	–
14	NORM_POS	user	0	B(r/w)	**NORM**al **POS**ition. Normal signal value.	Used for alarm and DISTURBance calculation purposes.
23	RP_F_CTL	user	1	B(r)	**R**e**P**eat **F**ail **C**on**T**ro**L**. Request for reduced number of reports of repetitive alarms.	–

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
20	AL_BLK	dialog	0	B(r/w)	1=**BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
22	PR_BLK	dialog	0	B(r/w)	1=**BL**oc**K**ing of event **PR**intout in Operator Station.	–
21	AL_P_BLK	PC	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K**. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC program.	–
36	ERR_TR	user	0	–	**ERR**or **TR**eatment. Pointer to data base element EVENT_TREAT which defines the event handling in Operator Station of signal errors.	Recommended settings: 0=No event reporting 2=Event reporting incl. alarm handling.
37	VALUE_TR	user	0	–	**VALUE TR**eatment. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of signal value changes.	Recommended settings: 0=No event reporting 1=Event reporting, no alarm handling. 2=Event reporting incl. alarm handling.
18	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indicating whether a state of alarm exists in element.	–
8	MAN_ENTR	system	–	B(r/w)	1=Flag indicating that the signal value has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	–
9	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–
17	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**ail **BL**oc**K**. Flag indicating that a repeating alarm is present in the element but that the indication has been blocked.	–
16	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	–

Function

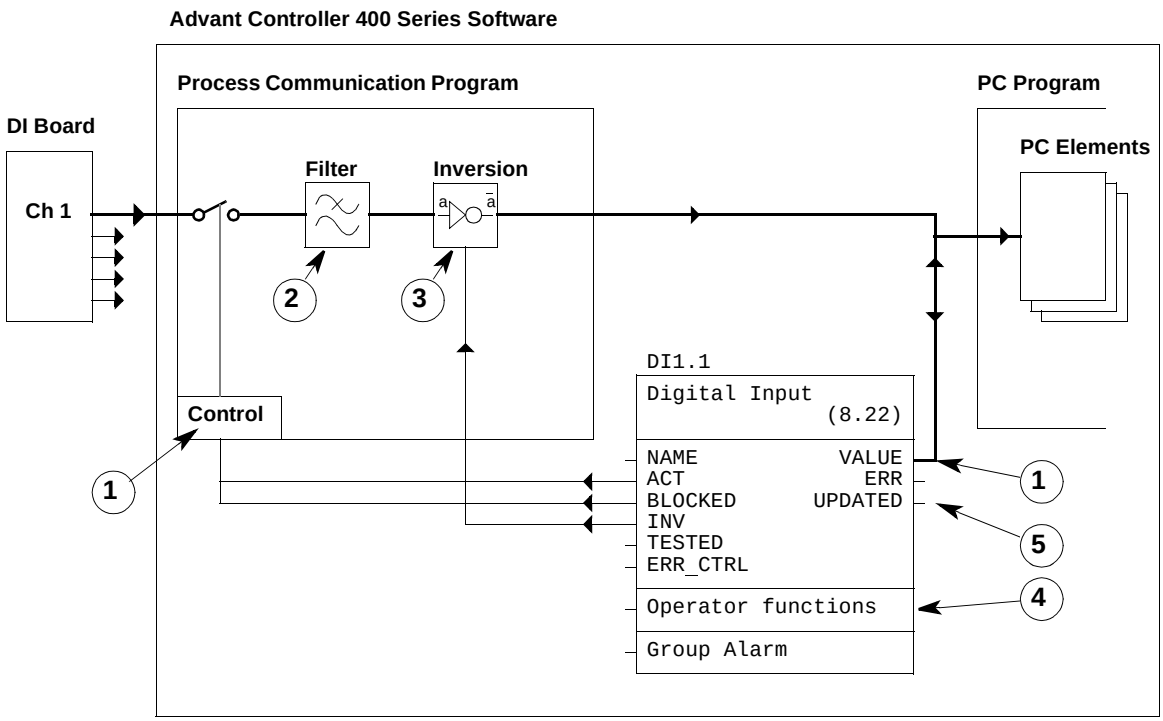
With the data base element you control the signal processing executed by the data communication program. You can also define the interface to the Advant Station 500 Series Operator Station system.

The signal processing includes:

1. Updating
2. Filtering
3. Inversion
4. Operator Station function
5. Error handling.

The figure below illustrates this process.

Function of Digital Input Terminals, S100 I/O



See ”Function (notes on S400 I/O)” for further information on applications using S400 I/O via ABB Master Fieldbus.

1. Updating

The VALUE is updated at intervals determined by the terminal SCANTime in the DI board data base element if the board has been scanned.

You should set SCANT to the requirements of your system.

If you set BLOCKED, the data acquisition stops, allowing manual entry of VALUE.

To disable the data acquisition completely, you set ACTivated to 0. This excludes the input from processing.

2. Filtering

With the DI board element you may select filter time for groups of 8 input signals.

The input must be stable for so many ms as given by the filter time.

The filter should be used to avoid ”bounce” from switches and reduce the number of interrupts.

3. Inversion

If you set the INVert terminal, the VALUE will be 0 when the electric signal is on and VALUE will be 1 when it is off. This is suitable when the logical sensor function is the inverse of the electrical.

4. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation.

5. Error handling

The supervision function for an Digital Input indicates errors via the ERR terminal. ERR is set for all signals of a DI board or DX unit element when the local or remote board function is defined as non-functional. Missing or incorrectly strapped hardware are typical errors as are errors in software or data base elements. For DX units it is possible that the error is in the bus communication (ABB MasterFieldbus).

ERR is set in the signal element if the DI board is not implemented.

The LED on the board front shows steady light if ERR is set (provided that the CPU has access to the board). ERR is reset, if hardware error, within 5 seconds of replacement of the non-functional hardware unit.

Function (Notes on S400 I/O)

The digital data acquisition is handled by a remote DX unit connected to a Advant Station 500 Series Operator Station via MasterFieldbus. A DX unit's software configuration is determined through a DX unit data base element in Advant Controller 400 Series. Such an element is comparable to a DI board element for a digital input unit located in the Advant Controller 400 Series framework.

All handling of the individual signal, and it's Digital Input element, is the same regardless of whether S100 or S400 I/O is used. See below for some minor differences.

Updating

S400 I/O cannot match the time resolution obtainable with S100 I/O and interrupt-controlled input signals. Several asynchronous program functions delays the remote digital data acquisition function.

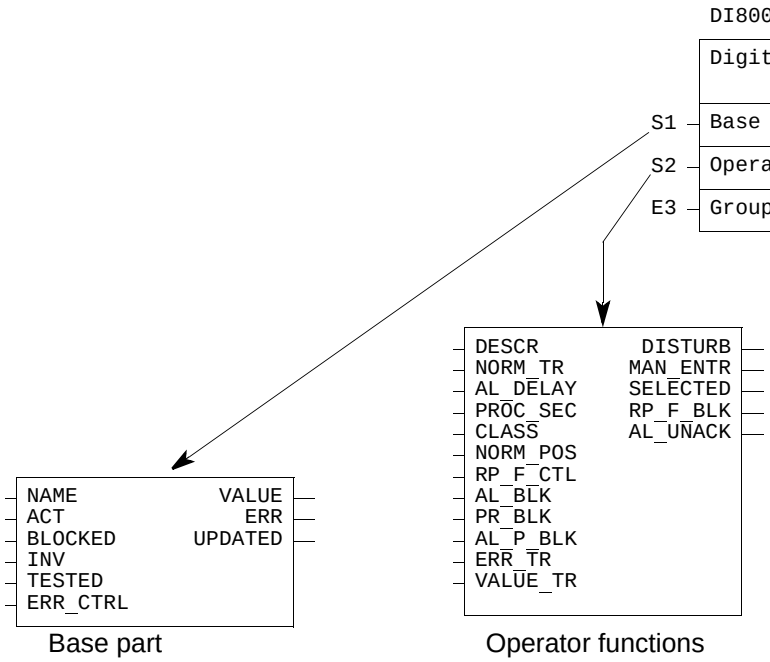
- DX units read and filter process data with a scan time interval of 2 ms. This means that the time resolution of filtered values is 2 ms.
- The scan time interval of the communication depends on the number of units of different types that are connected to the bus. 10 ms is a typical value.
- The scan time value of the DX unit element determines how often the values are updated in the data base and how quick the event handling will be. INTERRUPT not be selected.

Digital Input DIS8xx

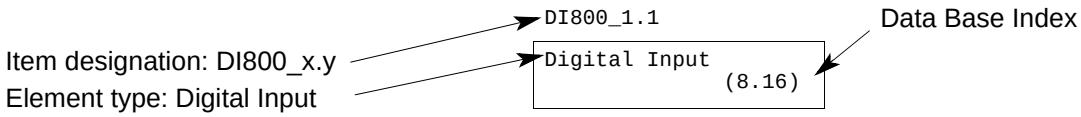
Summary

The Digital Input signal data base element is subordinate to the DI module data base element specifying a DI810, DI811, DI814, DI820, DI821, DI830, DI831, DI885 or DI890 hardware module.

Overview

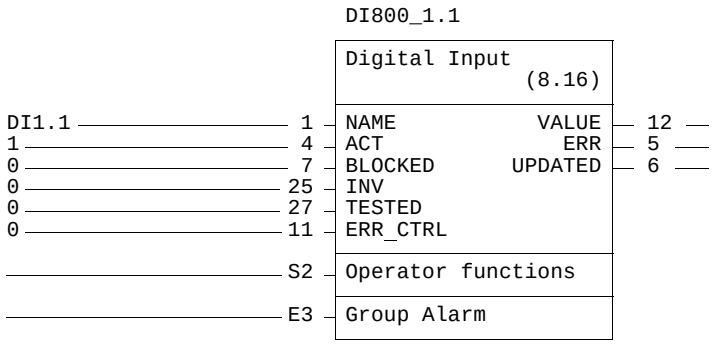


Head



Item designation: DI800_x.y
Element type: Digital Input
Call name: (DIS810),(DIS811), (DIS814),(DIS820), (DIS821), (DIS830), (DIS831), (DIS885), (DIS890)

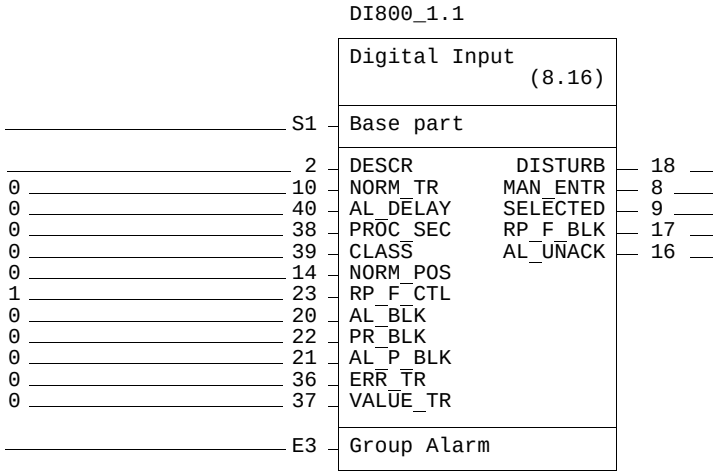
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DI800_x.y	–	Each Digital Input signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
4	ACT	user	1	B(r)	1=the signal is **ACT**ive. 0=the signal is spare.	–
7	BLOCKED	dialog	0	B(r/w)	1=updating of signal value is **BLOCKED**.	–
25	INV	user	0	B(r/w)	1=the signal value is **INV**erted.	–
27	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
11	ERR_CTRL	user	0	B(r)	**ERR**or **C**on**TR**o**L**. 0=Value is frozen when error occurs. 1=Value is set to the inverted value of NORM_POS when error occurs.	–
12	VALUE	system	–	B(r/w)	Signal **VALUE**.	–
5	ERR	system	–	B(r/w)	1=hardware or configuration **ERR**or.	–
6	UPDATED	system	–	B(r/w)	1=system indicates that VALUE has been **UPDATED**.	Cannot be affected by user.

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Maximum 20 characters. You may enter any information regarding the signal.
10	NORM_TR	user	0	B(r)	1=**NORM**al event driven updating on displays and lists in Operator Station.	0=no event driven updating in Operator Station.
40	AL_DELAY	user	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds: 1 - 127.	0 = no delay.
38	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
39	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station	–
14	NORM_POS	user	0	B(r/w)	**NORM**al **POS**ition. Normal signal value.	Used for alarm and DISTURBance calculation purposes.
23	RP_F_CTL	user	1	B(r)	**R**e**P**eat **F**ail **C**on**T**ro**L**. Request for reduced number of reports of repetitive alarms.	–

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
20	AL_BLK	dialog	0	B(r/w)	1=**BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
22	PR_BLK	dialog	0	B(r/w)	1=**BL**oc**K**ing of event **PR**intout in Operator Station.	–
21	AL_P_BLK	PC	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K**. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC program.	–
36	ERR_TR	user	0	–	**ERR**or **TR**eatment. Pointer to data base element EVENT_TREAT which defines the event handling in Operator Station of signal errors.	Recommended settings: 0=No event reporting 2=Event reporting incl. alarm handling.
37	VALUE_TR	user	0	–	**VALUE TR**eatment. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of signal value changes.	Recommended settings: 0=No event reporting 1=Event reporting, no alarm handling. 2=Event reporting incl. alarm handling.
18	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indicating whether a state of alarm exists in element.	–
8	MAN_ENTR	system	–	B(r/w)	1=Flag indicating that the signal value has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	–
9	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–
17	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**ail **BL**oc**K**. Flag indicating that a repeating alarm is present in the element but that the indication has been blocked.	–
16	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	–

Function

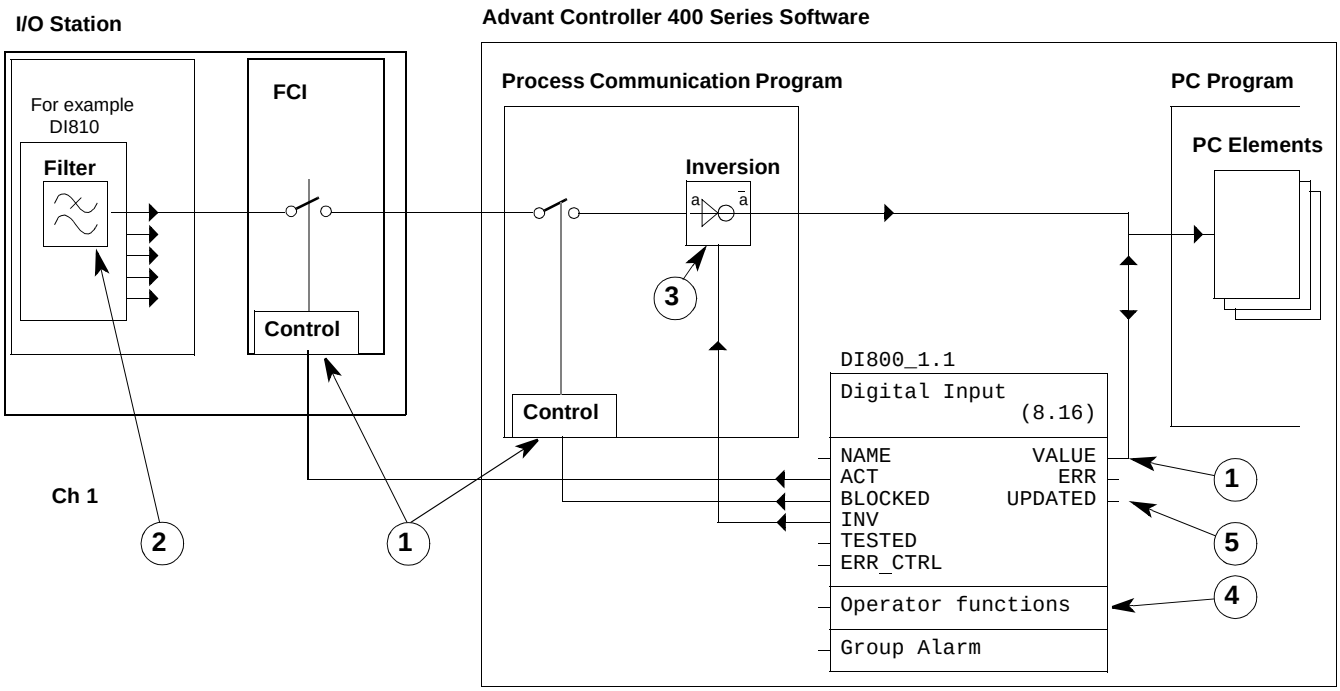
With the data base element you control the signal processing executed by the data communication program. You can also define the interface to the Advant Station 500 Series Operator Station system.

The signal processing includes:

1. Updating
2. Filtering
3. Inversion
4. Operator Station function
5. Error handling
6. Sequence of event DI830, DI831, DI885.

The figure below illustrates this process.

Function of Digital Input Terminals, S800 I/O



FCI = Fieldbus Communication Interface
for example CI810

1. Updating

The VALUE is updated at intervals determined by the terminal SCANTime in the DI module data base element. You should set SCANT to the requirements of your system.

The mirroring of the input data via Advant Fieldbus 100 does influence the “freshness” of the data read and converted by the system. The Advant Fieldbus 100 scan time (INSCANT) is set on the DI module element and the cycle time is common for all channels on the DI module.

If you set BLOCKED, the data acquisition stops, allowing manual entry of VALUE.

To disable the data acquisition completely, you set ACTivated to 0. This excludes the input from processing.

2. Filtering

With the DI module element you may select one filter time for all input signals.

The filter should be used to avoid ”bounce” from switches.

3. Inversion

If you set the INVert terminal, the VALUE will be 0 when the electric signal is on and VALUE will be 1 when it is off.
This is suitable when the logical sensor function is the inverse of the electrical.

4. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation.

5. Error handling

The supervision function for an Digital Input indicates errors via the ERR terminal. ERR is set for all signals of a DI module element when the module function is defined as non-functional. Missing or incorrect hardware, wrong module type, fieldbus communication errors, errors in software or data base elements.

ERR is set in the signal element if the DI module is not implemented, channel not ACTivated or channel on the I/O module report error.

The red F (Fault) LED on the module front usually shows a steady light if the module is faulty. ERR is reset, if hardware error, within 5-10 seconds of replacement of the non-functional hardware unit.

6. Sequence of event DI830, DI831, DI885

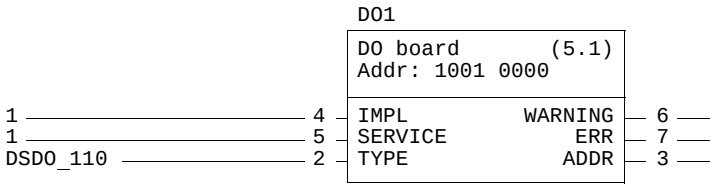
Use of long INSCANT and/or SCANT can give inconsistency between DISTURBance and VALUE.

DO board DO

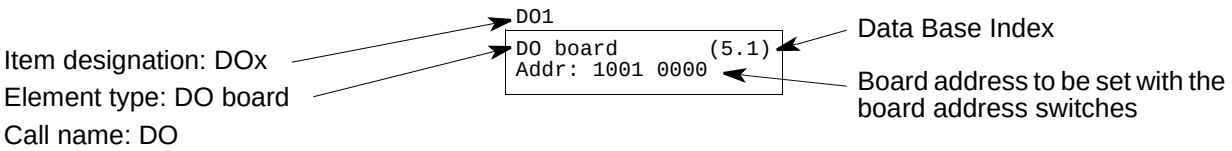
Summary

The DO board data base element holds the data values of the terminals associated to a standard digital output board. The element is superior to the signal elements associated to the digital output channels in the board.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
4	IMPL	user	1	B(r)	0=the board is spare 1=the board is **IMPL**emented	–
5	SERVICE	user, dialog	1	B(r/w)	The in-**SERVICE** terminal controls/shows whether the board is in service or has been taken out of service.	–
2	TYPE	user	DSDO_110	–	Board **TYPE**: DSDO_110, DSDO_115, DSDO_120, DSDO_131, DSDO_140.	TYPE must be selected when creating the element. The full name including "_" must be entered.
6	WARNING	system	–	B(r)	Not used.	–
7	ERR	system	–	B(r)	**ERR**or flag indicating non-functional board.	–
3	ADDR	system	–	–	Board location within the I/O **ADDR**ess range, presented in decimal format.	Cannot be changed.

Function

The output lines to the process are connected in the connection unit. This unit contains overvoltage protection and fuses.

Different board types with different electrical terminals (for example different signal levels, different static-or relay outputs) are available. Galvanic isolation is obtained through optocoupler or relays.

Yellow LED's indicate the state of the output registers. A red LED indicates board error.

Address selection: The address to be set is given in the element head.

Example: The first digital output card uses hexadecimal address 90=1001 0000 (that is address bits 4 and 7 set).

For board data and strappings, please refer to the manuals *Advant Controller 410 User's Guide* and *Advant Controller 450 User's Guide*.

Board Set-up Procedure

With the data base element you set up the board for the process communication.

The board set-up includes:

1. Implementation
2. Disabling
3. Board type
4. Error handling.

1. Implementation

During system INIT the board and its signals are included in the tables that define the PDC (Process Data Communication). If you set IMPL=0 the board, and the channels associated with it, are removed from the PDC's tables.

2. Disabling

At any time, you can use the SERVICE terminal to disable, and later enable the board. This saves some but not all CPU-load. This function will be used if a board must be unplugged during operation. (If Advant Station 500 Series Operator Station is included in your system – see the Advant Station 500 Series Operator Station manuals.

3. Board type selection

The full name of the board, including "_" must be entered. TUPE must be selected when creating the element. Please note that version designation is omitted when you enter board type. For example, DSDO 120A is to be entered as DSDO_120.

Once created, a board type can be changed if the new board type has the same number of channels as the old one. If not, the data base element and all the subordinated signal elements must be deleted.

4. Error handling

The ERR terminal is set in DO board element, if the board is defined as non-functional by the control function.

The ERR terminal can be connected to the PC program for the desired function.

ERR is reset, if hardware error, within 5 seconds of replacement of the non-functional board.

The error lamp on the board is lit when ERR is set, provided that CPU has access to the board.

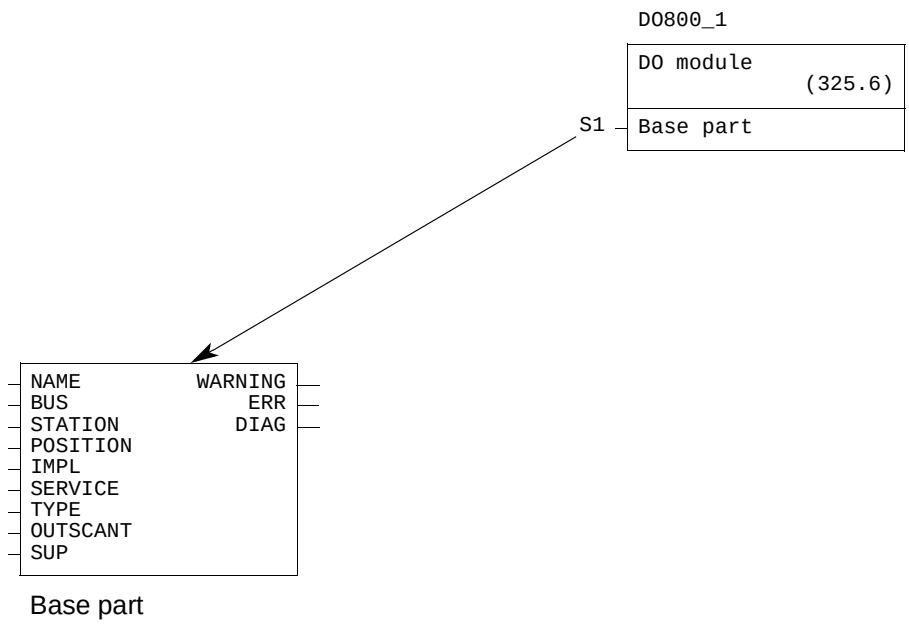
DO module DO81x, DO82x

Summary

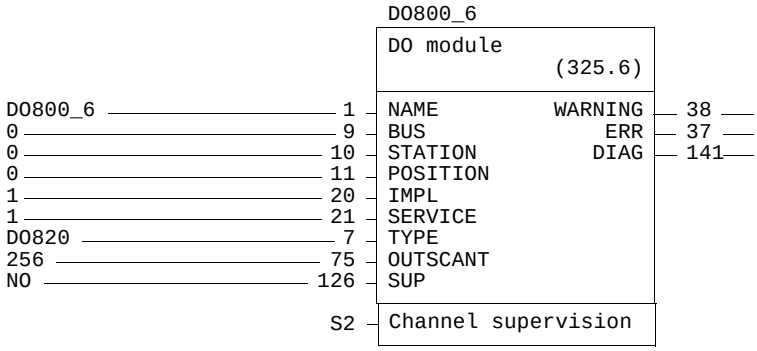
The DO module data base element specifies an Digital Output hardware module inserted in an S800 I/O station. The data base element is superior to the signal elements associated to the digital output channels in the module. The following modules are supported:

- DO810: 16 channels with 24 V DC, 0.5 A short circuit proof. Isolation: 2 groups of 8. Rated isolation voltage 50 V.
- DO814: 16 channels with 24 V DC, 0.5 A short circuit proof. Isolation: 2 groups of 8, current sink.
- DO820: 8 channel relay output, with normally open contacts 24–230 V AC, 3 A, individual isolation. Rated isolation voltage 250 V.
- DO821: 8 channels relay output, with normally closed contacts 24–230 V AC, 3 A, individual isolation. Rated isolation voltage 250 V.

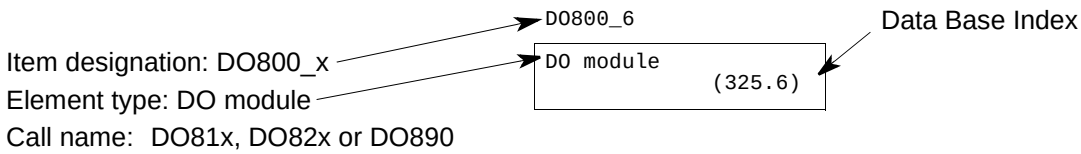
Overview



Base part



Head



Terminal, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DO800_x	–	Unique **NAME** of the I/O module.	Maximum 20 characters.
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	
20	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	DO81x/ DO82x	–	Module **TYPE** designation: DO810, DO814, DO820, DO821	–
75	OUTSCANT	user	256	–	Fieldbus **OUT**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–

Terminal, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
126	SUP	user	NO	–	Output power **SUP**ervision: YES=enabled NO=not enabled	–
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
141	DIAG	system	–	I(r)	**DIAG**nostics.	See section “S800 I/O module DIAG terminal” in the Introduction.

Function

The output lines to the process are connected in the termination unit. Galvanic isolation is obtained through optocoupler or transformers.

A red F (Fault) LED indicates a fault or uninitiated module, a green R (Run) LED indicates module in operational mode and a yellow W (Warning) LED indicates warning (error in output power supply).

Yellow LED’s indicate the state of the output signals.

Refer to the manuals *S800 I/O User’s Guide* for more detailed information regarding the module.

Termination Units for the DO81x and DO82x modules

Module	Termination Units
DO810, DO814	TU810, TU812, TU814, TU830
DO820, DO821	TU811, TU831, TU836, TU837

Module Set-up Procedure

With the data base element you set up the module for the process communication.

The module set-up includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of OUTSCANT
5. Error handling.

1. Implementation

During system INIT the module and its signals are included in the tables that define the process communication. If you set IMPL=0 on the module, the module and the channels associated with it are removed from the process communication tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation, to avoid unnecessary system messages. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system

3. Selection of address (BUS, STATION, POSITION) terminals

How to select the address terminals BUS, STATION and POSITION can be found in section “Address terminals BUS, STATION, POSITION and SUBPOS “ in the Introduction.

4. Selection of OUTSCANT

The OUTSCANT terminal defines the cycle time to be used on Advant Fieldbus 100 to transmit the output value from the AC 400 Series Controller to the I/O station. The selection of cycle time (OUTSCANT) shall be chosen with care due to bus bandwidth. The maximum load on AF 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User’s Guide*. The following table describes the load generated by the DO810, DO815, DO820 DO821 or DO890 module for all available cycle times:

Generated AF 100 load in percent at different cycle times on OUTSCANT

1ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
8.809	4.409	2.209	1.109	0.559	0.284	0.146	0.077	0.043	0.026	0.017	0.013	0.011

5. Error Handling

The ERR terminal is set in the module element, if the module is determined non-functional, by the control function. Indicated errors are non-existent hardware, wrong module type, malfunctioning or software or data base errors. The ERR terminal can be connected to the PC program for desired function. ERR is reset, at hardware errors, automatically after replacement of the faulty module.

6. Output power supervision

DO810 and DO814 have two supervised inputs for external output power supply. One for channel 1 to 8 and one for channel 9 to 16.

DO module DO815

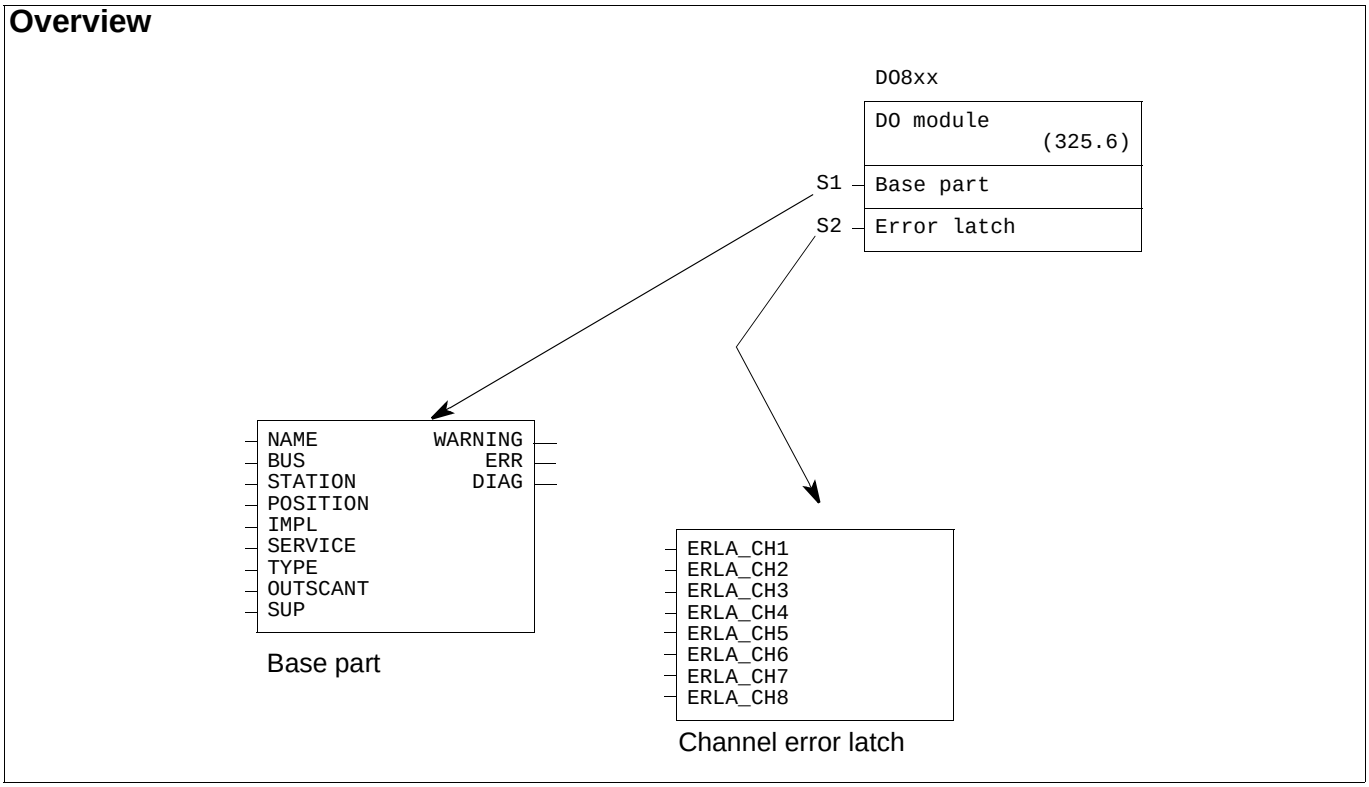
Summary

The DO module data base element specifies an Digital Output hardware module inserted in an S800 I/O station. The data base element is superior to the signal elements associated to the digital output channels in the module. The following modules are supported:

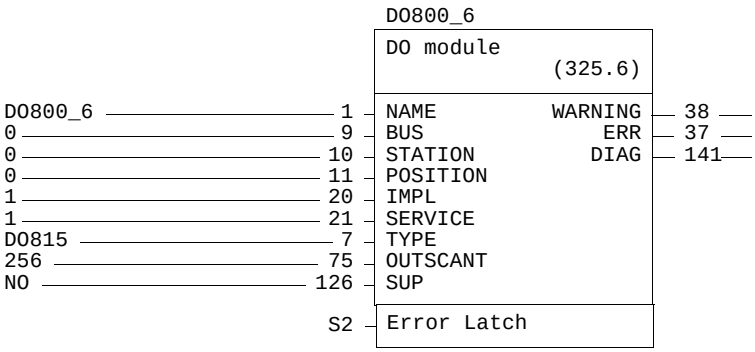
- DO815: 8 channels with 24 V, 2 A solid state, short circuit proof signal and error latching.

The function error latching is available for Advant Controller 410 version 1.5 and Advant Controller 450 version 2.3.

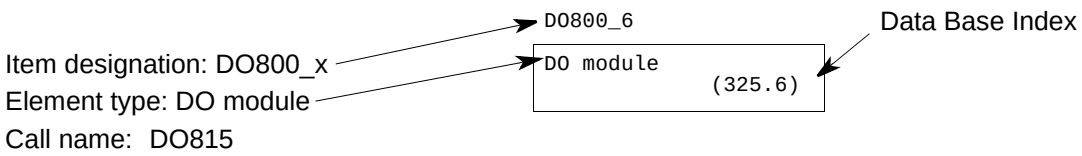
Overview



Base part



Head



Terminal, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DO800_x	–	Unique **NAME** of the I/O module.	Maximum 20 characters.
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	
20	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	DO815	–	Module **TYPE** designation: DO815	–
75	OUTSCANT	user	256	–	Fieldbus **OUT**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–
126	SUP	user	NO	–	Output power **SUP**ervision: YES=enabled NO=not enabled	–

Terminal, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
141	DIAG	system	–	I(r)	**DIAG**nostics.	See section “S800 I/O module DIAG terminal” in the Introduction.
144 to 151	ERLA_CH#	User	0	-	**ER**ror **LA**tch of channel # 1 = enable 0 = not enable	Error Latch of channel have been introduced from release AC410 1.5 and AC450 2.3, before DO815 can be used without error latching. To release a latched error change ERLA_ch# to NO and back to YES again.

Function

The output lines to the process are connected in the termination unit. Galvanic isolation is obtained through optocoupler.

A red F (Fault) LED indicates a fault or uninitiated module, a green R (Run) LED indicates module in operational mode and a yellow W (Warning) LED indicates warning (error at same channel).

Yellow LED's indicate the state of the output signals. Red LED’s indicate channel error.

Refer to the manuals *S800 I/O User’s Guide* for more detailed information regarding the module.

Termination Units for the DO815 modules

Module	Termination Units
DO815	TU810, TU812, TU814, TU830

Module Set-up Procedure

With the data base element you set up the module for the process communication.

The module set-up includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of OUTSCANT
5. Error handling.

1. Implementation

During system INIT the module and its signals are included in the tables that define the process communication. If you set IMPL=0 on the module, the module and the channels associated with it are removed from the process communication tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation, to avoid unnecessary system messages. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system

3. Selection of address (BUS, STATION, POSITION) terminals

How to select the address terminals BUS, STATION and POSITION can be found in section “Address terminals BUS, STATION, POSITION and SUBPOS “ in the Introduction.

4. Selection of OUTSCANT

The OUTSCANT terminal defines the cycle time to be used on Advant Fieldbus 100 to transmit the output value from the AC 400 Series Controller to the I/O station. The selection of cycle time (OUTSCANT) shall be chosen with care due to bus bandwidth. The maximum load on AF 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User's Guide*. The following table describes the load generated by the DO810, DO815, DO820 DO821 or DO890 module for all available cycle times:

Generated AF 100 load in percent at different cycle times on OUTSCANT

1ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
8.809	4.409	2.209	1.109	0.559	0.284	0.146	0.077	0.043	0.026	0.017	0.013	0.011

5. Error Handling

The ERR terminal is set in the module element, if the module is determined non-functional, by the control function. Indicated errors are non-existent hardware, wrong module type, malfunctioning or software or data base errors. The ERR terminal can be connected to the PC program for desired function. ERR is reset, at hardware errors, automatically after replacement of the faulty module.

6. Output supervision

Channel wise output power, short and open circuit supervision.

7. Channel error latch

A channel wise error latch function is supported. To use channel error latching, channel error latch must be enabled. With channel error latch enabled an error will be latched and must be released by the user. A detected error on a channel will give low signal at the output.

The function error latching is introduced from release AC410 1.5 and AC450 2.3, before that DO815 can be used without error latching.

The DIAG terminal provides for a more specific information about the I/O module diagnostics, see section “S800 I/O module DIAG terminal “ in the Introduction.

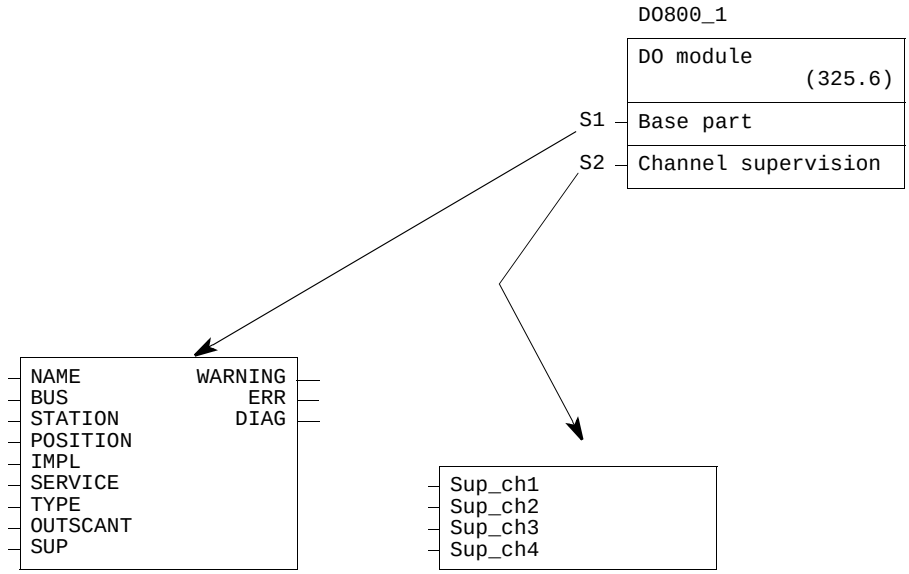
DO module DO890

Summary

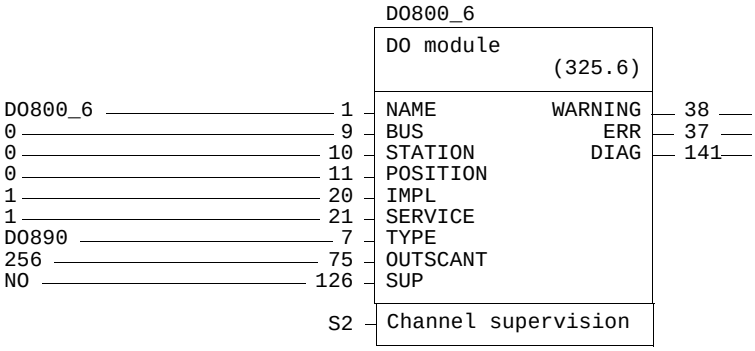
The DO module data base element specifies an Digital Output hardware module inserted in an S800 I/O station. The data base element is superior to the signal elements associated to the digital output channels in the module. The following modules are supported:

- DO890: 4 channels with Intrinsic Safety interface.

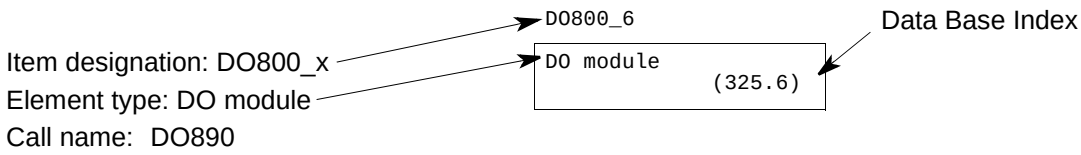
Overview



Base part



Head



Terminal, Base part

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	user	DO800_x	–	Unique **NAME** of the I/O module.	Maximum 20 characters.
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	
20	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	DO890	–	Module **TYPE** designation: DO890.	–
75	OUTSCANT	user	256	–	Fieldbus **OUT**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–

Terminal, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
126	SUP	user	NO	–	Output power **SUP**ervision: YES=enabled NO=not enabled	–
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
141	DIAG	system	–	I(r)	**DIAG**nostics.	See section “S800 I/O module DIAG terminal” in the Introduction.
145	Sup_ch#	User	NO	-	Supervision of channel # YES = enable NO = not enable	**Note!** To use channel supervision, output power supervision must be enabled.

Function

The output lines to the process are connected in the termination unit. Galvanic isolation is obtained through optocoupler or transformers.

A red F (Fault) LED indicates a fault or uninitiated module, a green R (Run) LED indicates module in operational mode and a yellow W (Warning) LED indicates warning (error in output power supply).

Yellow LED's indicate the state of the output signals. Red LED’s indicate channel error.

Refer to the manuals *S800 I/O User’s Guide* for more detailed information regarding the module.

Termination Units for the DO890 modules

Module	Termination Units
DO890	TU890

Module Set-up Procedure

With the data base element you set up the module for the process communication.

The module set-up includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of OUTSCANT
5. Error handling.

1. Implementation

During system INIT the module and its signals are included in the tables that define the process communication. If you set IMPL=0 on the module, the module and the channels associated with it are removed from the process communication tables at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation, to avoid unnecessary system messages. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system

3. Selection of address (BUS, STATION, POSITION) terminals

How to select the address terminals BUS, STATION and POSITION can be found in section “Address terminals BUS, STATION, POSITION and SUBPOS “ in the Introduction.

4. Selection of OUTSCANT

The OUTSCANT terminal defines the cycle time to be used on Advant Fieldbus 100 to transmit the output value from the AC 400 Series Controller to the I/O station. The selection of cycle time (OUTSCANT) shall be chosen with care due to bus bandwidth. The maximum load on AF 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User's Guide*. The following table describes the load generated by the DO810, DO815, DO820 DO821 or DO890 module for all available cycle times:

Generated AF 100 load in percent at different cycle times on OUTSCANT

1ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
8.809	4.409	2.209	1.109	0.559	0.284	0.146	0.077	0.043	0.026	0.017	0.013	0.011

5. Error Handling

The ERR terminal is set in the module element, if the module is determined non-functional, by the control function. Indicated errors are non-existent hardware, wrong module type, malfunctioning or software or data base errors. The ERR terminal can be connected to the PC program for desired function. ERR is reset, at hardware errors, automatically after replacement of the faulty module.

6. Output power supervision

DO890 have one internal output power supervision.

7. Channel supervision

A channel wise short and open wire fault detection is supported. To use channel supervision, output power supervision must be enabled.

The DIAG terminal provides for a more specific information about the I/O module diagnostics, see section “S800 I/O module DIAG terminal “ in the Introduction.

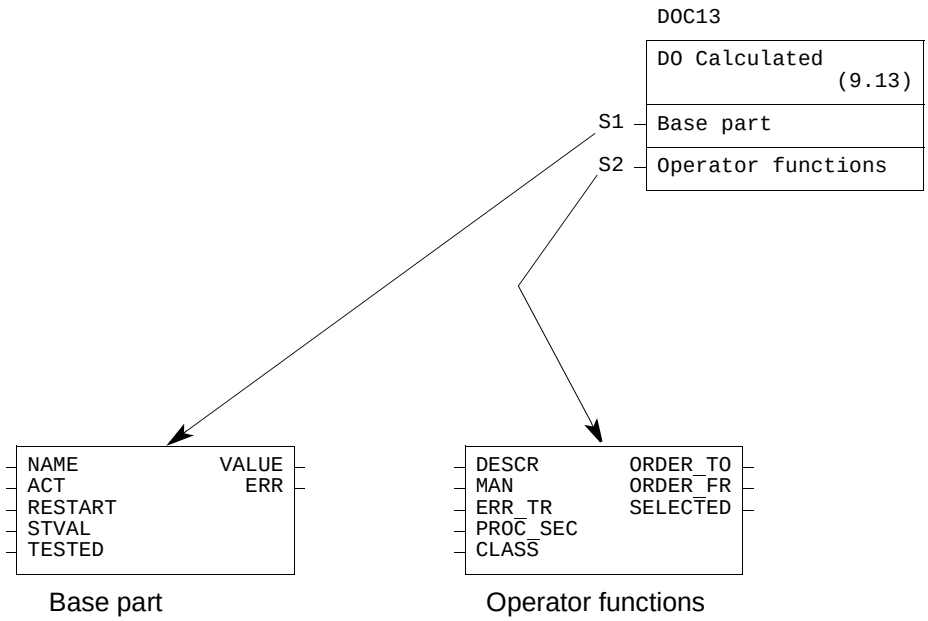
DO Calculated DOC

Summary

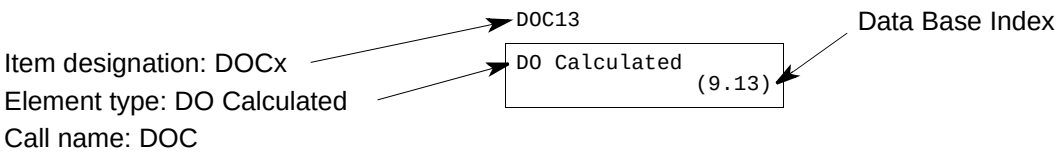
The data values of the DO Calculated data base element is to supply Operator functions – similar to those for a digital output – to any boolean value.

The DO Calculated element holds data for these functions.

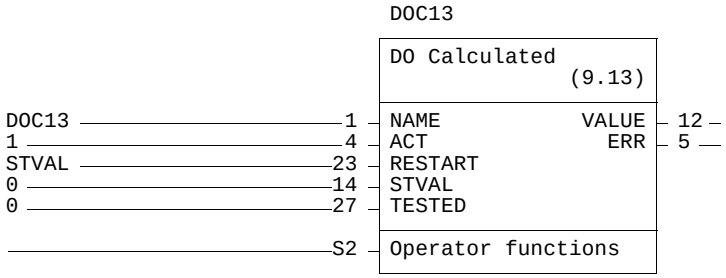
Overview



Head



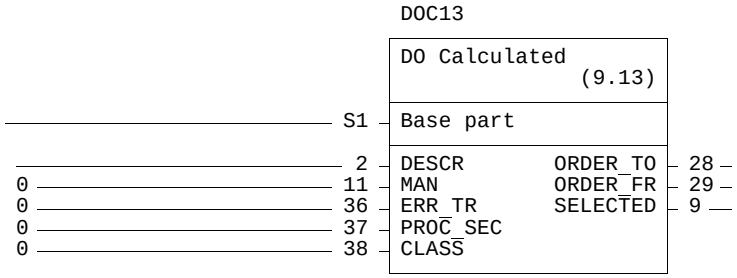
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DOCx	–	Each DO Calculated signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
4	ACT	user	1	B(r)	1=the signal is **ACT**ive. 0=the signal is spare.	–
23	RESTART	user	STVAL	B(r/w)	**RESTART** selects output value at system restart. STVAL=restart value defined by terminal STVAL VALUE=the last value is selected as restart value	–
14	STVAL	user	0	B(r/w)	**ST**art **VAL**ue for output.	–
27	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
12	VALUE	system	–	R(r/w)	Signal **VALUE**.	–
5	ERR	system	–	B(r/w)	1=Configuration **ERR**or.	ERRor is reset only by correcting the error.

Operator functions



Terminal Description, Operator functions

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Maximum 20 characters. You may enter any information regarding the signal.
11	MAN	dialog	0	B(r/w)	Flag indicating that **MAN**ual control by Operator Station operator has been selected.	0=controlled and updated by PC-program.
36	ERR_TR	user	–	–	ERRor TReatment.	Not used.
37	PROC_SEC	user	0	I(r/w)	PROCess SECtion is used for sectioning the object handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
38	CLASS	user	0	I(r/w)	CLASS subdivides process section. Used by status list function in Operator Station.	–
28	ORDER_TO	system	–	B(r/w)	ORDER TO. Flag carrying ”ON”, ”OPEN” etc. orders from Operator Station system to PC program.	Can be read and then reset by PC program.
29	ORDER_FR	system	–	B(r/w)	ORDER FRom. Flag carrying ”OFF”, ”CLOSE” etc. orders from Operator Station system to PC program.	Can be read and then reset by PC program.
9	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–

Function

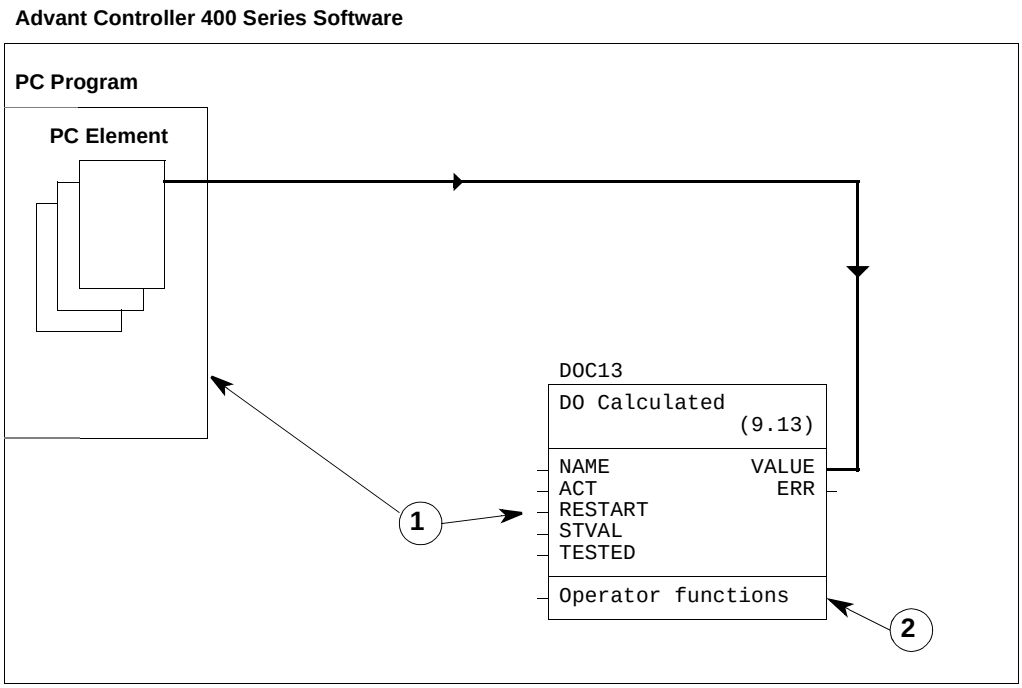
The DO Calculated data base element defines an internal digital output. The value will not be out on hardware but all Operator functions associated to a digital output will be available for the value.

The signal processing includes:

1. Update
2. Operator Station functions.

The figure below illustrates this process.

Function of DO Calculated Terminals



1. Update

Update is requested by the PC program connected to the output, the Engineering Stations or from the Operator Station.

To disable the signal completely, you set ACTivated to 0.

The signal is stored in VALUE. The signal is available for connection to programs and for presentation.

2. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation.

Update of Values at System Init

The value to be used at system init is determined by the RESTART terminal. The value retained in the VALUE terminal since the last execution is used if RESTART=VALUE.

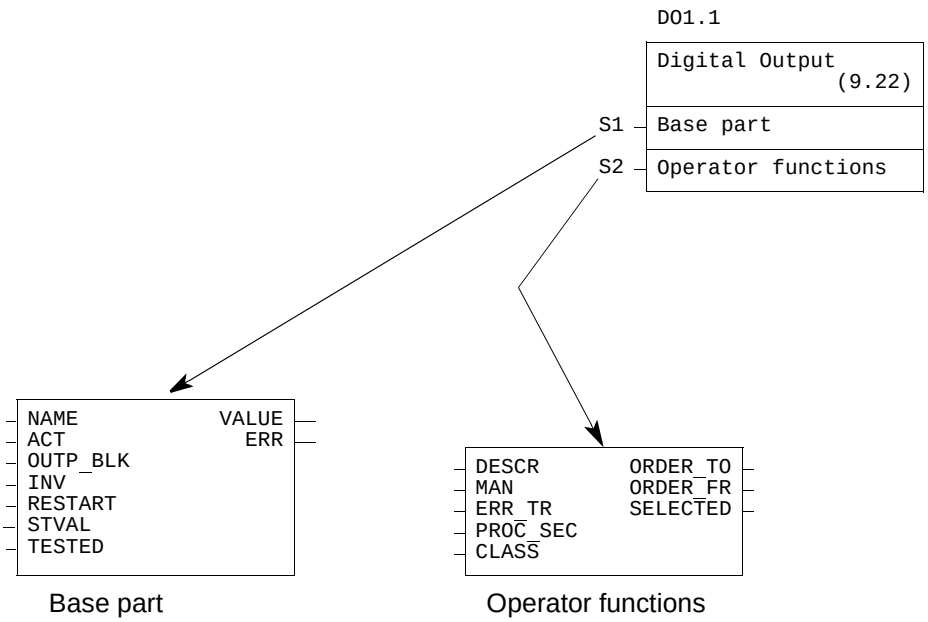
The VALUE terminal is updated with the value of STVAL if RESTART=STVAL.

Digital Output DOS, DOXS

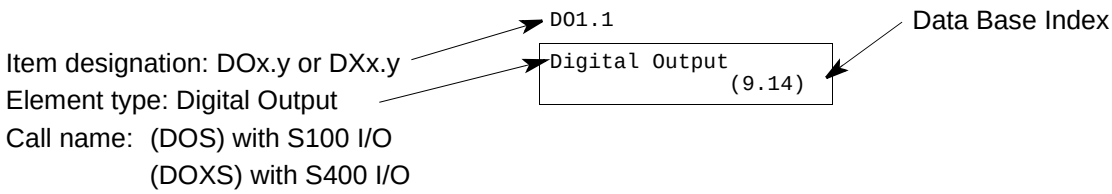
Summary

The Digital Output data base element holds the data values of the terminals associated to a standard digital output channel. The element is subordinate to the DO board data base element (S100 I/O) or the DX unit data base element (S400 I/O).

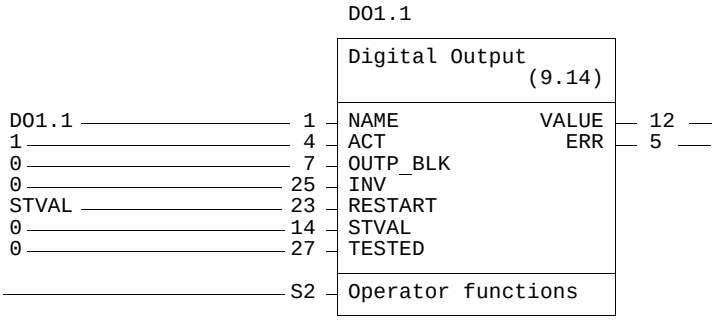
Overview



Head



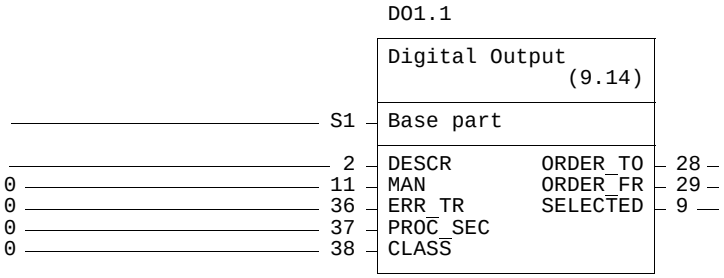
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DOx.y *or* DXx.y	–	Each Digital Output signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
4	ACT	user	1	B(r/w)	1=the signal is **ACT**ive. 0=the signal is spare.	–
7	OUTP_BLK	user	0	B(r/w)	1=board **OUTP**ut is **BL**oc**K**ed.	VALUE will still be updated.
25	INV	user	0	B(r/w)	1=the signal value is **INV**erted.	–
23	RESTART	user	STVAL	B(r/w)	Selects **RESTART** output value. STVAL=Start value according to STVAL terminal VALUE=Start value equals last value	–
14	STVAL	user	0	B(r/w)	**ST**art **VAL**ue for output.	–
27	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	–
12	VALUE	system	–	R(r/w)	Output signal **VALUE** (before inversion).	–
5	ERR	system	–	B(r/w)	**ERR**or. 1=hardware or configuration error.	–

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Maximum 20 characters. You may enter any information regarding the signal.
11	MAN	dialog	0	B(r/w)	Flag indicating that **MAN**ual control by Operator Station operator has been selected.	0=controlled and updated by PC-program.
36	ERR_TR	user	0	–	**ERR**or **TR**eatment.	Not used.
37	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the object handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
38	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
28	ORDER_TO	system	–	B(r/w)	Flag carrying ”ON”, ”OPEN” etc. **ORDER**s from Operator Station system **TO** PC-program.	Can be read and reset by PC program.
29	ORDER_FR	dialog	–	B(r/w)	Flag carrying ”OFF”, ”CLOSE” etc. **ORDER**s **FR**om Operator Station system to PC-program.	Can be read and reset by PC program.
9	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–

Function

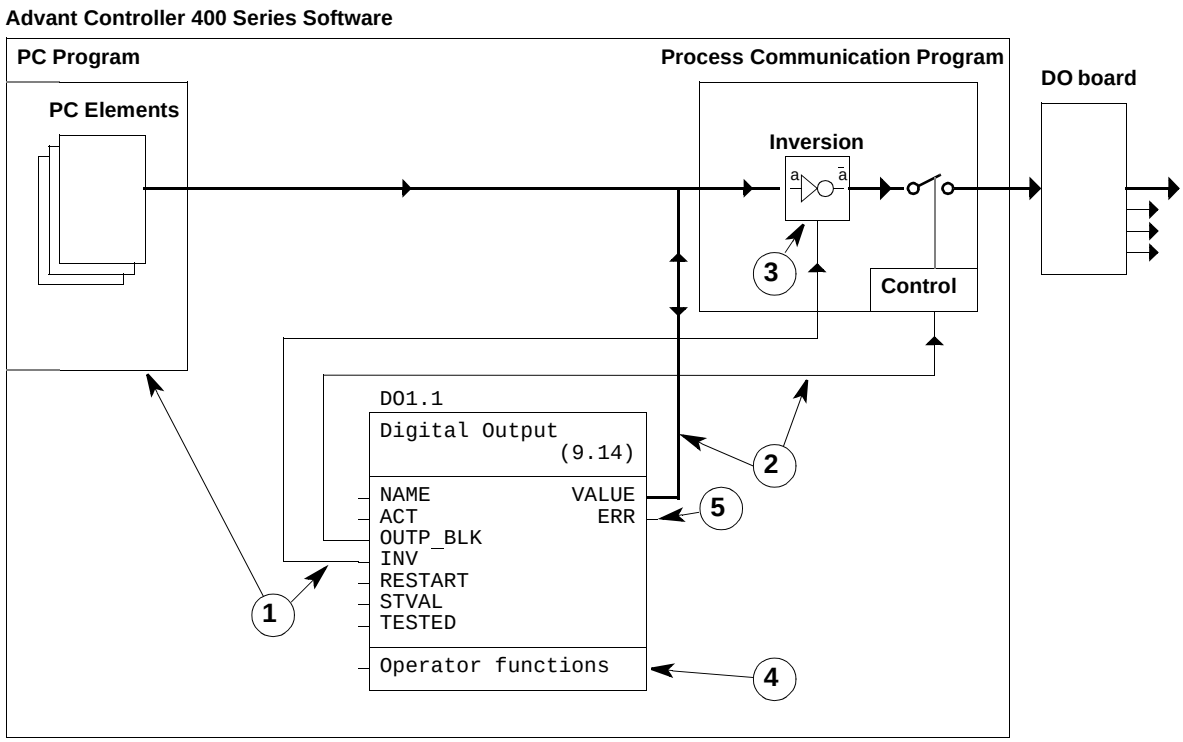
With the data base element you control the signal processing executed by the process communication program. You can also define the interface to the Advant Station 500 Series Operator Station system.

The signal processing includes:

1. Update request
2. Update of data base VALUE
3. Inversion
4. Operator Station functions
5. Error handling.

The figure below illustrates this process.

Function of Digital Output Terminals



See Function (notes on S400 I/O) for further information on applications using S400 I/O via ABB MasterFieldbus.

1. Update request

Update is requested by the PC program connected to the output, or by other programs (such as the element) or from the Operator Station terminal. To disable the signal completely, you set ACTivated to 0.

2. Update of data base VALUE

The signal is stored in VALUE. In the data base element, the signal is available for connection to PC programs and for monitoring. If you set OUTP_BLK, only VALUE is updated, not the physical output. This enables the program to be run without affecting the process.

3. Inversion

If you set the INVert terminal, the electrical signal is off when VALUE is 1, an it is on when VALUE is 0. This is suitable when the logical actuator function is the inverse of the electrical.

4. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation and Functional Unit documentation.

5. Error handling

The supervision function for an Digital Output indicates errors via the ERR terminal. ERR is set for all signals of a DO board or DX unit element when the S100 or S400 I/O board function is defined as non-functional. Missing or incorrectly strapped hardware are typical errors as are errors in software or data base elements. For DX units it is possible that the error is in the bus communication (ABB MasterFieldbus).

ERR is set in the signal element if the DO board is not implemented.

The LED on the board front shows steady light if ERR is set (provided that the CPU has access to the board). ERR is reset within 10 seconds of replacement of the non-functional hardware unit.

Update of Values at System Init

The value to be used at system init is determined by the RESTART connection. The value retained in the VALUE connection since the last execution is used if RESTART = VALUE.

The VALUE connection is updated with the value of STVAL if RESTART = STVAL and the signal is simultaneously put out on hardware.

Function (Notes on S400 I/O)

Output of digital signals is handled by a DX unit connected to an Advant Controller 400 Series via MasterFieldbus. A DX unit's software configuration is determined through a DX unit data base element in Advant Controller 400 Series. Such an element is comparable to a DO board element for a digital output unit located in the Advant Controller 400 Series framework.

All handling of the individual signal, and it's Digital Input element, is the same regardless of whether S100 or S400 I/O is used. See below for some minor differences.

Communication error function

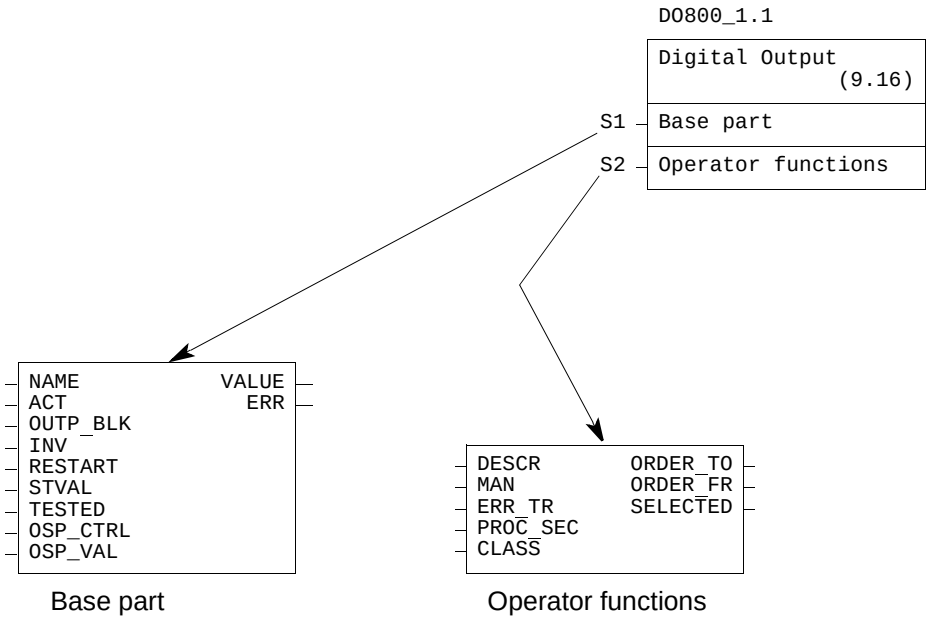
The values of the RESTART and STVAL parameters are stored in the DX unit and are used to determine the value of the output if it is not updated within 0.2 seconds. This can occur if the communication is broken.

Digital Output DOS81x, DOS82x, DOS890

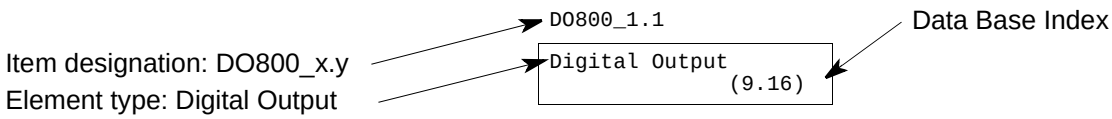
Summary

The Digital Output signal data base element is subordinate to the DO module data base element specifying a DO810, DO814, DO815, DO820, DO821 or DO890 hardware module.

Overview

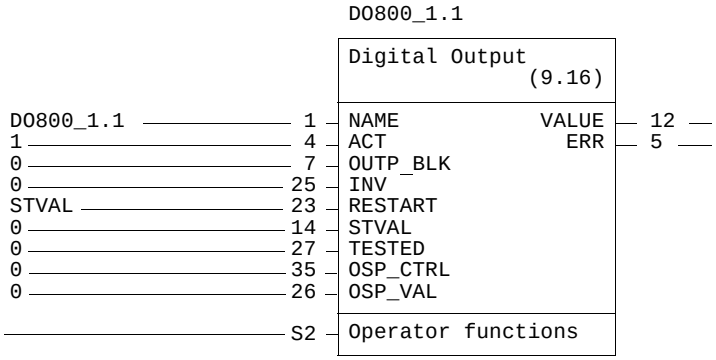


Head



Item designation: DO800_x.y
Element type: Digital Output
Call name: (DOS810), (DOS814), (DOS815), (DOS820), (DOS821), (DOS890)

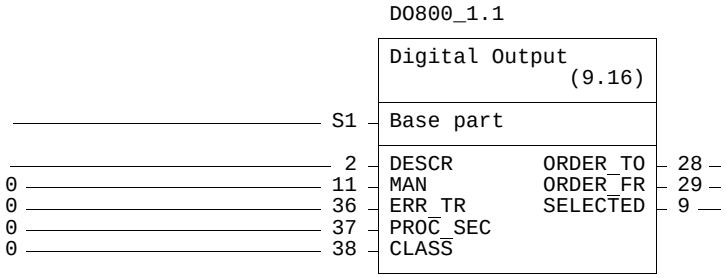
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DO800_x.y	–	Each Digital Output signal must have a unique **NAME**.	Maximum 20 characters. Spaces are not allowed.
4	ACT	user	1	B(r/w)	1=the signal is **ACT**ive. 0=the signal is spare.	–
7	OUTP_BLK	user	0	B(r/w)	1=board **OUTP**ut is **BL**oc**K**ed.	VALUE will still be updated.
25	INV	user	0	B(r/w)	1=the signal value is **INV**erted.	–
23	RESTART	user	STVAL	B(r/w)	Selects **RESTART** output value. STVAL=Start value according to STVAL terminal VALUE=Start value equals last value	–
14	STVAL	user	0	B(r/w)	**ST**art **VAL**ue for output.	–
27	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	–
35	OSP_CTRL	user	0	B(r/w)	**O**utputs **S**et as **P**redetermined: 0=keep current value 1=set to OSP_VAL	-
26	OSP_VAL	user	0	B(r/w)	**OSP VAL**ue to set if OSP_CTRL is set to 1.	-
12	VALUE	system	–	R(r/w)	Output signal **VALUE** (before inversion).	–
5	ERR	system	–	B(r/w)	**ERR**or. 1=hardware or configuration error.	–

Operator functions



Terminal Description, Operator functions

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Maximum 20 characters. You may enter any information regarding the signal.
11	MAN	dialog	0	B(r/w)	Flag indicating that **MAN**ual control by Operator Station operator has been selected.	0=controlled and updated by PC-program.
36	ERR_TR	user	0	–	**ERR**or **TR**eatment.	Not used.
37	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the object handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
38	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
28	ORDER_TO	system	–	B(r/w)	Flag carrying ”ON”, ”OPEN” etc. **ORDER**s from Operator Station system **TO** PC-program.	Can be read and reset by PC program.
29	ORDER_FR	dialog	–	B(r/w)	Flag carrying ”OFF”, ”CLOSE” etc. **ORDER**s **FR**om Operator Station system to PC-program.	Can be read and reset by PC program.
9	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–

Function

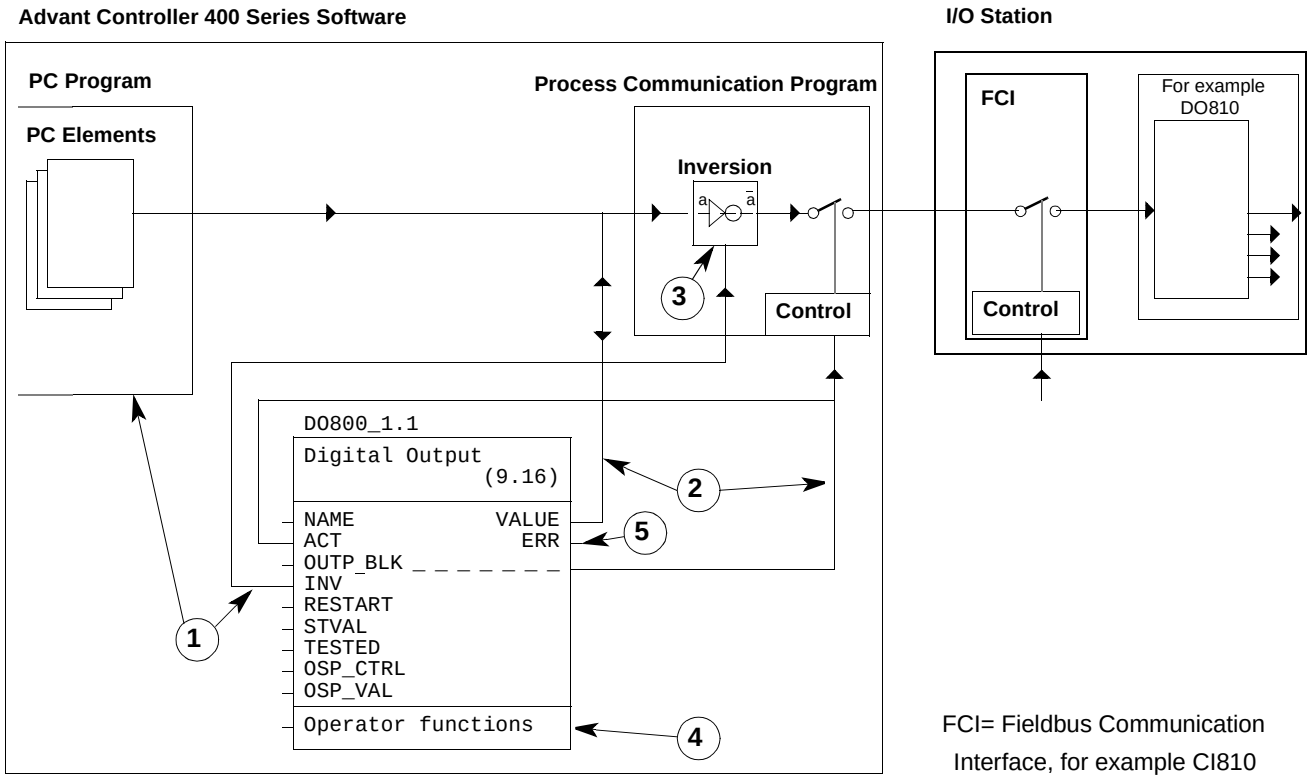
With the data base element you control the signal processing executed by the process communication program. You can also define the interface to the Advant Station 500 Series Operator Station system.

The signal processing includes:

1. Update request
2. Update of data base VALUE
3. Inversion
4. Operator Station functions
5. Error handling.

The figure below illustrates this process.

Function of Digital Output Terminals



1. Update request

Update is requested by the PC program connected to the output, or by other programs (such as the element) or from the Operator Station terminal.

The mirroring of the output data via Advant Fieldbus 100 does influence the “freshness” of the data to be received by the DO module. The Advant Fieldbus 100 scan time (OUTSCANT) is set on the DO module element and the cycle time is common for all channels on the DO module.

To disable the signal completely, you set ACTivated to 0.

2. Update of data base VALUE

The signal is stored in VALUE. In the data base element, the signal is available for connection to PC programs and for monitoring.

If you set OUTP_BLK, only VALUE is updated, not the physical output. This enables the program to be run without affecting the process.

3. Inversion

If you set the INVert terminal, the electrical signal is off when VALUE is 1, an it is on when VALUE is 0. This is suitable when the logical actuator function is the inverse of the electrical.

4. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation and Functional Unit documentation.

5. Error handling

The supervision function for an Digital Output indicates errors via the ERR terminal. ERR is set for all signals of an DO module when the module function is defined as non-functional. Missing or incorrect hardware, wrong module type, fieldbus communication errors are typical errors as are errors in software or data base elements.

When the DO81x, DO82x or DO890 loses communication with the Fieldbus Communication Interface module (for example CI810) or the AC 400 Series Controller the module will enter the OSP (Outputs Set as Predetermined) state. In the OSP state all channels will output a value according to the configuration on the OSP_CTRL and OSP_VAL terminals.

ERR is set in the signal element if the DO module is not implemented, error marked or channel on the I/O module report an error.

ERR is reset within 10 seconds of replacement of the non-functional hardware unit.

Update of Values at System Init

The value to be used at system init is determined by the RESTART connection. The value retained in the VALUE connection since the last execution is used if RESTART = VALUE.

The VALUE connection is updated with the value of STVAL if RESTART = STVAL and the signal is simultaneously put out on hardware.

DP module DP820

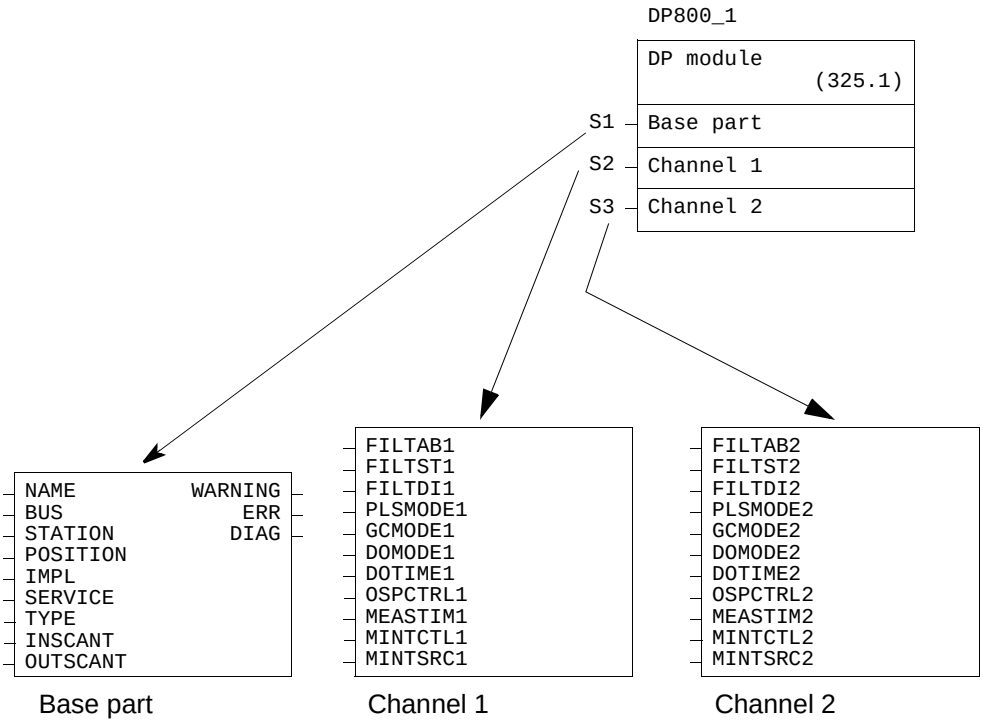
Summary

The DP module data base element specifies a 2 channel pulse counter inserted in an S800 I/O station. Each channel can be used for independent pulse count (length) measurement and frequency (speed) measurement.

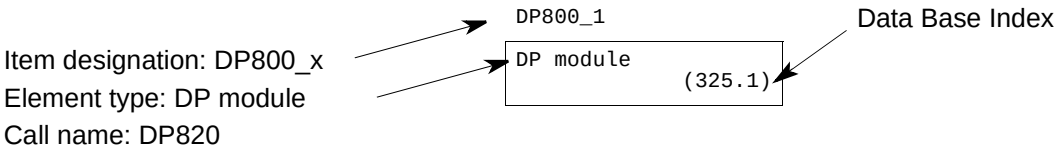
Configuration and supervision is handled via the data base element whereas dynamic data is channelled through the PC elements DP820-I (for measure values) and DP820-O (for set points).

No data base elements exist for the pulse counter channels.

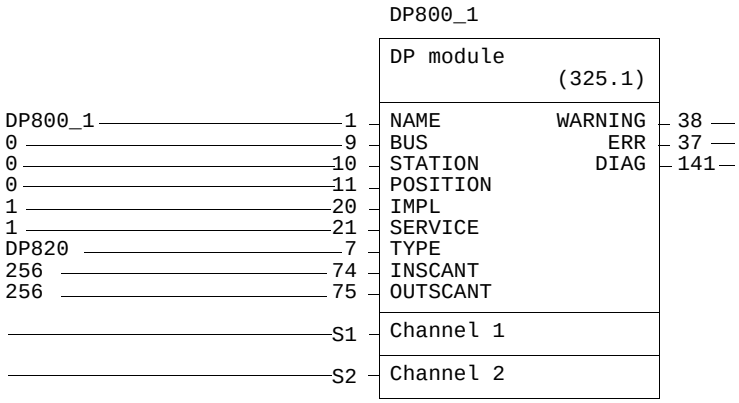
Overview



Head



Base part



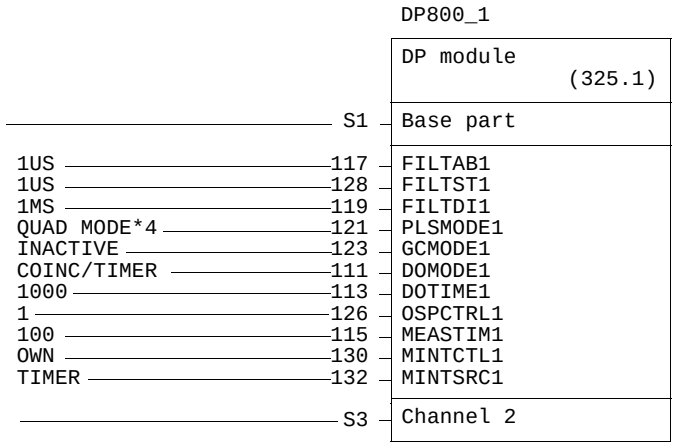
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DP800_x	–	Unique **NAME** of the I/O module.	Maximum 20 characters.
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	
20	IMPL	user	1	B(r)	0=the module is spare. 1=the module is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
7	TYPE	predef	DP820	–	Module **TYPE** designation: DP820.	–

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
74	INSCANT	user	256	–	Fieldbus **IN**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–
75	OUTSCANT	user	256	–	Fieldbus **OUT**put **SCAN T**ime. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
141	DIAG	system	–	I(r)	**DIAG**nostics.	See section “S800 I/O module DIAG terminal” in the Introduction.

Channel 1



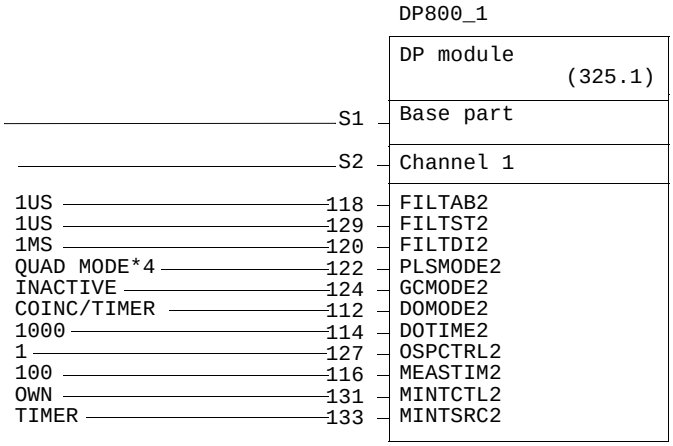
Terminal Description, Channel 1

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
117	FILTAB1	user	1US	–	**FILT**er time for **A** and **B** inputs. Possible values: UNFILTERED, 1US.	For UNFILTERED, see restrictions in the *S800 I/O Users Guide*.
128	FILTST1	user	1US	–	**FILT**er time for **ST** input: 1 µs or 1 ms. Possible values: 1US, 1MS.	–
119	FILTDI1	user	1MS	–	**FILT**er time for **DI** input: 1 ms or 5 ms. Possible values: 1MS, 5MS.	–
121	PLSMODE1	user	QUAD MODE*4	–	**P**u**LS**e **MODE**: 0=A:UP/B:DOWN 1=QUAD MODE*1 2=QUAD MODE*2 3=QUAD MODE*4 4=A:PULSE/B:DIR	See section “Pulse encoding “ below.
123	GCMODE1	user	INACTIVE	–	**G**ated **C**ount **MODE**. Possible values: 0=INACTIVE (always count) 1=DI LEVEL (DI level controlled) 2=DI RISING (DI positive edge controlled)	–
111	DOMODE1	user	COINC/ TIMER	–	**D**igital **O**utput **MODE**. Activation by coincidence or DO value. Deactivation by timer or DO value. 0=COINC/TIMER 1=PC/TIMER 2=PC/PC 3=COINC/PC	See section “Digital Output mode“ below.
113	DOTIME1	user	1000	–	**DO** pulse **TIME** in ms.	1 - 65535.
126	OSPCTRL1	user	1	–	**O**utput **S**et as **P**redetermined **C**on**TR**o**L**: 0=Keep current value 1=set to 0	–
115	MEASTIM1	user	100	–	Frequency **MEAS**urement **TIM**e in ms.	1 - 2000
130	MINTCTL1	user	OWN	–	Frequency **M**easure **INT**erval **C**on**T**ro**L**. Measure time controlled from own or other channel. Possible values: OWN, OTHER.	–

Terminal Description, Channel 1 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
132	MINTSRC1	user	TIMER	–	Frequency **M**easure **INT**erval **S**ou**RC**e. Controlled by timer (the measure interval is defined by MEASTIM1) or by coincidence (the measure interval is started and stopped by coincidence). Possible values: TIMER, COINC.	**Note!** If MINTCTL1 = OTHER, this terminal must be set equal to MINTSRC for other channel

Channel 2



Terminal Description, Channel 2

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
118	FILTAB2	user	1US	–	**FILT**er time for **A** and **B** inputs. Possible values: UNFILTERED, 1US.	For UNFILTERED, see restrictions in the *S800 I/O Users Guide*.
129	FILTST2	user	1US	–	**FILT**er time for **ST** input: 1 µs or 1 ms. Possible values: 1US, 1MS.	–
120	FILTDI2	user	1MS	–	**FILT**er time for **DI** input: 1 ms or 5 ms. Possible values: 1MS, 5MS.	–

Terminal Description, Channel 2 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
122	PLSMODE2	user	QUAD MODE*4	–	**P**u**LS**e **MODE**: 0=A:UP/B:DOWN 1=QUAD MODE*1 2=QUAD MODE*2 3=QUAD MODE*4 4=A:PULSE/B:DIR	See section “Pulse encoding “ below.
124	GCMODE2	user	INACTIVE	–	**G**ated **C**ount **MODE**: Inactive, DI level controlled, or DI pos. edge controlled. 0=INACTIVE 1=DI LEVEL 2=DI RISING	–
112	DOMODE2	user	COINC/ TIMER	–	**D**igital **O**utput **MODE**. Activation by coincidence or DO value. Deactivation by timer or DO value. 0=COINC/TIMER 1=PC/TIMER 2=PC/PC 3=COINC/PC	See section “Digital Output mode“ below.
114	DOTIME2	user	1000	–	**DO** pulse **TIME** in ms.	1 - 65535.
127	OSPCTRL2	user	1	–	**O**utput **S**et as **P**redetermined **C**on**TR**o**L**: 0=Keep current value 1=set to OSPVAL2	–
116	MEASTIM2	user	100	–	Frequency **MEAS**urement **TIM**e in ms.	1.2000
131	MINTCTL2	user	OWN	–	Frequency **M**easure **INT**erval **C**on**T**ro**L**. Measure time controlled from own or other channel. Possible values: OWN, OTHER.	–
133	MINTSRC2	user	TIMER	–	Frequency **M**easure **INT**erval **S**ou**RC**e. Controlled by timer (the measure interval is defined by MEASTIM2) or by coincidence (the measure interval is started and stopped by coincidence). Possible values: TIMER, COINC.	**Note:** If MINTCTL2 = OTHER, this terminal must be set equal to MINTSRC for other channel

Function

DP820 and Advant Controller 400 Series software offers two main functions:

1. Pulse counter measurement. A 29 bit bidirectional counter with:

- Coincidence detection controlling one digital output signal.
- Freezing of counter value depending of different conditions.
- Synchronization of counter depending of different conditions.

2. Frequency (or speed) measurement up to 1.5 MHz with:

- Freezing of value depending of different conditions.
- Selectable measure time within 1.2000 ms.
- Scaling of frequency measure value to engineering units.

Pulse encoding

The terminals PLSMODE1 and PLSMODE2 defines the method for pulse encoding.

0 or “A:UP/B:DOWN” should be entered for Up/Down pulse mode where Input A is used for up counting and Input B is used for down pulses.

Quadrature pulse mode implies two phase shifted pulse signals on Input A and Input B.
Enter 1 or “QUAD MODE*1” for multiplication factor 1
Enter 2 or “QUAD MODE*2” for multiplication factor 2
Enter 3 or “QUAD MODE*4” for multiplication factor 4.

4 or “A:PULSE/B:DIR” should be entered for Count/Direction pulse mode where Input A is used for pulse counting and Input B is used for direction. High signal on Input B means up counting, and low means down counting.

Digital Output mode

The terminals DOMODE1 and DOMODE2 define the behavior of digital output.

0 or “COINC/TIMER”: DO is activated when coincidence occurs and inactivated after the time specified by DOTIME.

1 or “PC/TIMER”: DO is activated by positive transition of terminal DOVALUE on PC element DP820-O and inactivated after the time specified by DOTIME.

2 or “PC/PC”: DO follows the value of terminal DOVALUE on PC element DP820-O.

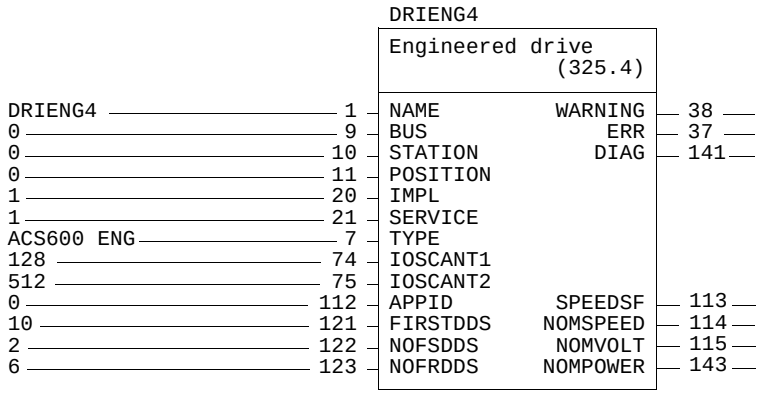
3 or “COINC/PC”: DO is activated when coincidence occurs if terminal DOVALUE on PC element DP820-O is 1, and deactivated when DOVALUE goes to 0.

Engineered drive DRIENG

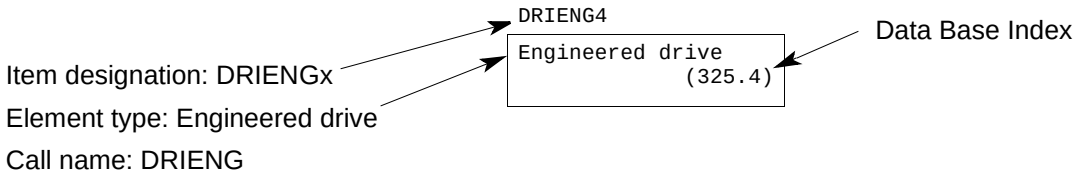
Summary

The DRIENG module data base element specifies an engineered drive hardware module connected to an S800 I/O station.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DRIENGx	–	Unique **NAME** of the I/O module.	Maximum 20 characters.
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
20	IMPL	user	1	B(r)	0=the drive is spare. 1=the drive is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the drive is in service or has been taken out of service.	–
7	TYPE	user	ACS600 ENG	–	Defines the **TYPE** of drive.	Maximum 10 characters.
74	IOSCANT1	user	512	–	Fieldbus **I**nput **O**utput **SCAN T**ime **1**. Used for fast send and receive data to/from the drive. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	The IOSCANT1 refers to Drive Data Sets 10 - 19.
75	IOSCANT2	user	1024	–	Fieldbus **I**nput **O**utput **SCAN T**ime **2**. Used for slow send and receive data to/from the drive. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	The IOSCANT2 refers to Drive Data Sets 20 - 28.
112	APPID	user	0	–	**APP**lication **ID**entity which has to match with the application identity in the drive. 0=no match is required >0= match is required	–
121	FIRSTDDS	user	10	–	**FIRST D**rive **D**ata **S**et in data set table.	Must be changed if the first drive data set in the drive does not comply to the default value.
122	NOFSDDS	user	2	–	**N**umber **OF S**end **D**rive **D**ata **S**et.	–
123	NOFRDDS	user	6	–	**N**umber **OF R**eceive **D**rive **D**ata **S**et	The value of this terminal can not be less than the value of NOFSDDS.
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
141	DIAG	system	–	I(r)	**DIAG**nostics.	–
113	SPEEDSF	system	–	I(r)	**SPEED S**cale **F**actor is used in calculations to get the rpm of the motor.	Uploaded from the drive when IMPL = 1.

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
114	NOMSPEED	system	–	I(r)	**NOM**inal **SPEED** of motor. This value can be used by the application in calculations of the actual speed.	Uploaded from the drive when IMPL = 1.
115	NOMVOLT	system	–	I(r)	**NOM**inal **VOLT**age of motor. This value can be used by the application in calculations of the actual voltage.	Uploaded from the drive when IMPL = 1.
143	NOMPOWER	system	–	R(r)	**NOM**inal **POWER** of motor. This value can be used by the application in calculations of the actual power.	Uploaded from the drive when IMPL = 1.

Function

With the data base element you set up the drive module for the process communication program. The process communication program creates two sending and two receiving CDP's (CDP=Cyclic Data Package). IOSCANT1 determines the transmission intervals for both the sending and receiving CDP used for data which are frequently exchanged. IOSCANT2 determines the transmission intervals for both the sending and receiving CDP used for data which are infrequently exchanged.

Module Set-up Procedure

The module set-up procedure includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of IOSCANT1 and IOSCANT2
5. Definition of application identity APPID
6. Upload of speed scale factor, nominal speed, power and voltage (SPEEDSF, NOMSPEED, NOMPOWER, NOMVOLT) from the drive (only when IMPL=1 or when the system is started). *This function is handled by the system.*
7. Error handling.

1. Implementation

During system INIT and when IMPL=1 the module is included in the process communication. If you set IMPL=0 on the module, the module is removed from the process communication at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation to avoid unnecessary system messages. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system. When the SERVICE terminal is 0 values are only read from the module.

3. Selection of address (BUS, STATION, POSITION) terminals

You can set up a DRIENG data base element in order to exchange data with the drive. The following terminals defines the address to the drive:

BUS = number of the bus connected to the l/O station for the actual drive

STATION = a positive number 1..79 of the l/O station

POSITION = a positive number (101..112), (201..212) … (701..712)

The POSITION number in the data base element must agree to the address defined in the drive.

4. Selection of IOSCANT1 and IOSCANT2

The IOSCANT1 and IOSCANT2 terminal defines the cycle time to be used on Advant Fieldbus 100 to send/receive drive process data from the l/O station to the Advant Controller 400 Series. The selection of cycle time (IOSCANT1 and IOSCANT2) shall be chosen with care due to bus bandwidth.The maximum load on Advant Fieldbus 100 is 70% for (cyclic) process data transfer. For additional information about Advant Fieldbus 100 see *Advant Fieldbus 100 User's Guide*. The following table describes the load generated by the DRIENG module for all available cycle times:

Generated AF 100 load in percent at different cycle times on IOSCANT1 and IOSCANT2

1 ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
50.400	25.200	12.600	6.300	3.150	1.575	0.788	0.394	0.197	0.098	0.049	0.025	0.012

The total load for an engineered drive is:

(load generated by IOSCANT1) + (load generated by IOSCANT2)

Example:

IOSCANT1 is 128 ms and IOSCANT2 is 512 ms, which means that the total load in percent is: 0.394 + 0.098 = 0.492%

5. Definition of application identity APPID

The APPID defines an identity of the drive application. The value of APPID must be the same as the application identity in the drive. Unequal application identities sets the WARNING flag. A value 0 of APPID overrides the test between the application identity in the controller and drive.

6. Upload of nominal speed, power and voltage (SPEEDSF, NOMSPEED, NOMPOWER, NOMVOLT) from drive (only when IMPL=1 or when the system is started)

The NOMSPEED, NOMPOWER and NOMVOLT defines the nominal data of the motor. These values can be used in the AMPL application to calculate actual engineering values of the motor, since a percentage of the nominal value is often sent by the drive.

The SPEEDSF is a scaling factor to use in conversions from actual speed to motor revolutions or from motor revolutions to speed reference set point. The motor revolution and speed reference formulas are as follows:

Motor revolution (in rpm) = (actual speed / 20000) x SPEEDSF

Speed reference = (rpm x 20000) / SPEEDSF

7. Error Handling

The ERR terminal is set in DRIENG module element shows errors due to the modules connection to the system or errors detected at configuration. Errors detected by the module itself is not shown if they do not generate communication errors. The normal S800 supervision supervises the modules. Example of indicated errors are:

- non-existent hardware
- wrong module type
- malfunctioning, software or data base errors.

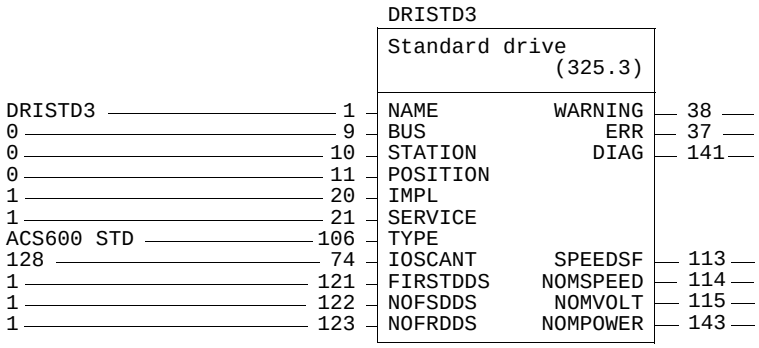
The “ERR” terminal can be connected to the PC program for desired function. ERR is reset, at hardware errors, automatically after replacement of the faulty module.

Standard drive DRISTD

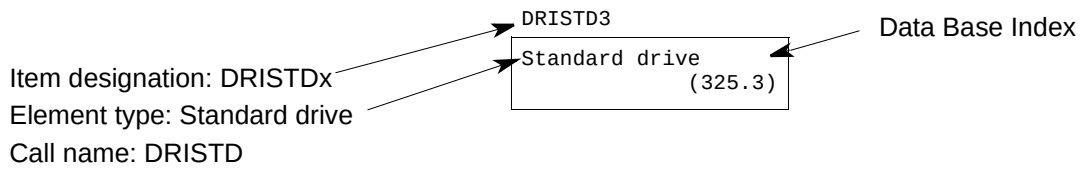
Summary

The DRISTD module data base element specifies a standard drive hardware module connected to an S800 I/O station.

Overview



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Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DRISTDx	–	Unique **NAME** of the drive.	Maximum 20 characters.
9	BUS	user	0	–	**BUS**. Part of Address.	See section “Address terminals BUS, STATION, POSITION AND SUBPOS” in the Introduction.
10	STATION	user	0	–	**STATION**. Part of Address.	
11	POSITION	user	0	–	**POSITION**. Part of Address.	

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
20	IMPL	user	1	B(r)	0=the drive is spare. 1=the drive is **IMPL**emented	–
21	SERVICE	dialog	1	B(r/w)	The **SERVICE** terminal shows whether the drive is in service or has been taken out of service.	–
106	TYPE	user	ACS600 STD	–	Defines the **TYPE** of drive.	Maximum 10 characters.
74	IOSCANT	user	512	–	Fieldbus **I**nput **O**utput **SCAN T**ime. Used for send and receive data to/ from the drive. Allowed values in ms: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048 and 4096.	–
121	FIRSTDDS	user	1	–	**FIRST D**rive **D**ata **S**et which contains send data to the drive.	Must be changed if the first drive data set in the drive does not comply to the default value.
122	NOFSDDS	user	1	–	**N**umber **OF S**end **D**rive **D**ata **S**et.	–
123	NOFRDDS	user	1	–	**N**umber **OF R**eceive **D**rive **D**ata **S**et	The value of this terminal can not be less than the value of NOFSDDS.
38	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
141	DIAG	system	–	I(r)	**DIAG**nostics.	–
113	SPEEDSF	system	–	I(r)	**SPEED S**cale **F**actor is used in calculations to get the rpm of the motor.	Uploaded from the drive when IMPL = 1.
114	NOMSPEED	system	–	I(r)	**NOM**inal **SPEED** of motor. This value can be used by the application in calculations of the actual speed.	Uploaded from the drive when IMPL = 1.
115	NOMVOLT	system	–	I(r)	**NOM**inal **VOLT**age of motor. This value can be used by the application in calculations of the actual voltage.	Uploaded from the drive when IMPL = 1.
143	NOMPOWER	system	–	R(r)	**NOM**inal **POWER** of motor. This value can be used by the application in calculations of the actual power.	Uploaded from the drive when IMPL = 1.

Function

With the data base element you set up the drive module for the process communication program. The process communication program creates one sending and one receiving CDP (Cyclic Data Package). IOSCANT determines the transmission intervals for both the sending and receiving CDP.

Module Set-up Procedure

The module set-up procedure includes:

1. Implementation
2. Disabling
3. Selection of address (BUS, STATION, POSITION) terminals
4. Selection of IOSCANT
5. Upload of speed scale factor, nominal speed, power and voltage (SPEEDSF, NOMSPEED, NOMPOWER, NOMVOLT) from the drive (only when IMPL=1 or when the system is started). This function is handled by the system.
6. Error handling.

1. Implementation

During system INIT and when IMPL=1 the module is included in the process communication. If you set IMPL=0 on the module, the module is removed from the process communication at the next scan.

2. Disabling

You can use the SERVICE terminal to disable, and later enable the module. This saves some but not all CPU load. This function can be used if a module must be unplugged during operation to avoid unnecessary system messages. See Advant Station 500 Series Operator Station manual if Advant Station 500 Series Operator Station is included in your system. When the SERVICE terminal is 0 values are only read from the module.

3. Selection of address (BUS, STATION, POSITION) terminals

You can set up a DRISTD data base element in order to exchange data with the drive. The following terminals defines the address to the drive:

BUS = number of the bus connected to the l/O station for the actual drive

STATION = a positive number 1..79 of the l/O station

POSITION = a positive number (101..112), (201..212) … (701..712)

The POSITION number in the data base element must agree to the address defined in the drive.

4. Selection of IOSCANT

The IOSCANT terminal defines the cycle time to be used on Advant Fieldbus 100 to send/receive drive process data from the l/O station to the Advant Controller 400 Series. The selection of cycle time (IOSCANT) shall be chosen with care due to bus bandwidth.The maximum load on Advant Fieldbus 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User's Guide*.

The following table describes the load generated by the DRISTD module for all available cycle times:

Generated AF 100 load in percent at different cycle times on IOSCANT

1 ms	2ms	4ms	8ms	16ms	32ms	64ms	128ms	256ms	512ms	1024ms	2048ms	4096ms
21.600	10.800	5.400	2.700	1.350	0.675	0.388	0.169	0.084	0.042	0.021	0.011	0.005

5. Upload of nominal speed, power and voltage (SPEEDSF, NOMSPEED, NOMPOWER, NOMVOLT) from drive (only when IMPL=1 or when the system is started)

The NOMSPEED, NOMPOWER and NOMVOLT defines the nominal data of the motor. These values can be used in the AMPL application to calculate actual engineering values of the motor, or the percentage of the nominal values. How the user application is made is determined by the type of received values from the drive (percentage or absolute values).

The SPEEDSF is a scaling factor to use in conversions from actual speed to motor revolutions or from motor revolutions to speed reference set point. The motor revolution and speed reference formulas are as follows:

Motor revolution (in rpm) = (actual speed / 20000) x SPEEDSF

Speed reference = (rpm x 20000) / SPEEDSF

6. Error Handling

The ERR terminal in DRISTD module element shows errors due to the modules connection to the system or errors detected at configuration. Errors detected by the module itself is not shown if they do not generate communication errors. The normal S800 supervision supervises the modules. Example of indicated errors are:

- non-existent hardware
- wrong module type
- malfunctioning, software or data base errors

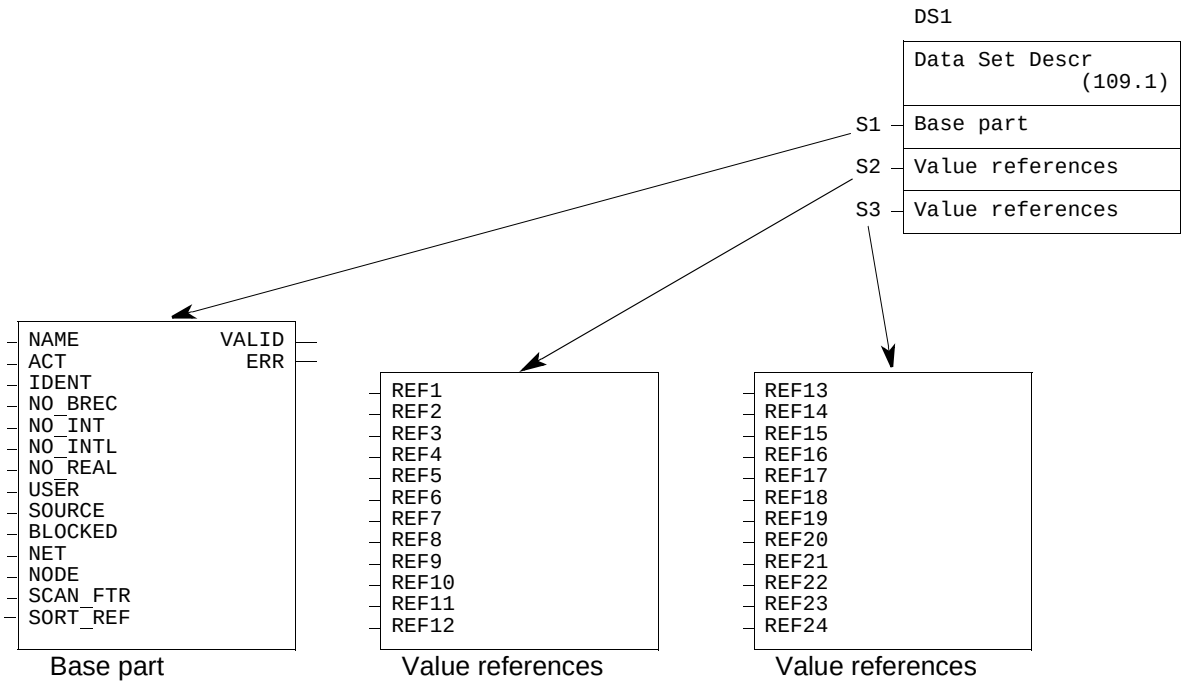
The ERR terminal can be connected to the PC program for desired function. ERR is reset, at hardware errors, automatically after replacement of the faulty module.

Data Set Descr DS

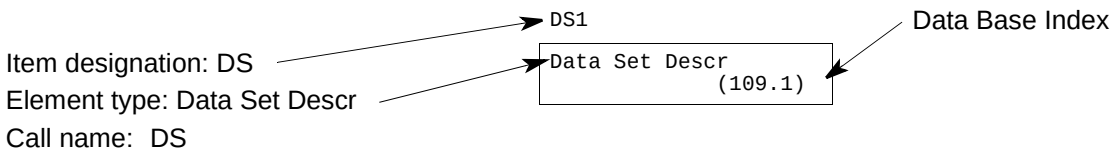
Summary

The data values of the Data Set Descr data base element define a block of data to be received or transmitted over MasterNet via Data Set Communication or via ExCom (External Computer communication). With the element you select address, mode and data for one data set. The element defines the set, and contains references to separate DAT data base elements. In these DAT elements the data to be transmitted or received, is stored.

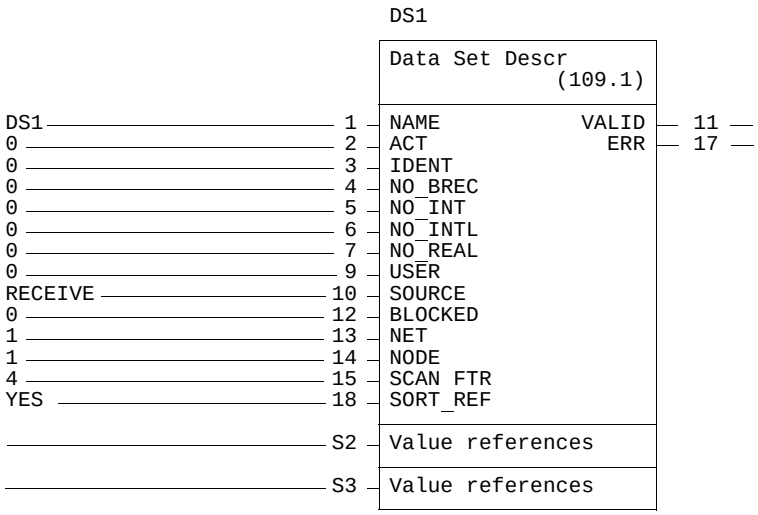
Overview



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Base part



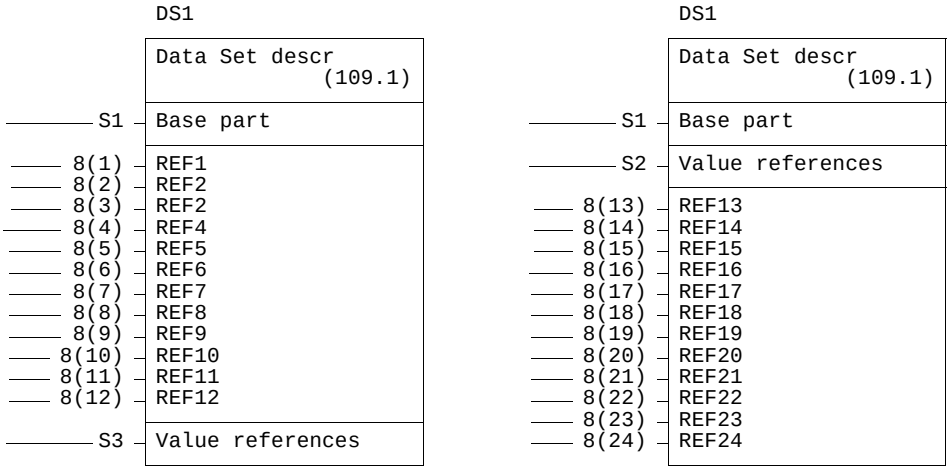
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DSx	A12(r/w)	Each Data Set must have a unique **NAME**.	Maximum 7 characters.
2	ACT	user	0	B(r/w)	1=the element is **ACT**ivated. 0=the element is spare.	For ACT=0, data cannot be accessed.
3	IDENT	user	0	–	**IDENT**ifies the data set in the node. For Data Set Communication: 1..255 For ExCom: –127..–1	For ACT=1 IDENT=0 is not allowed.
4	NO_BREC	user	0	–	The **N**umber of **B**oolean **REC**ords in the set. 0..24.	The total number of records (NO_xxx) in the set is limited to 24.
5	NO_INT	user	0	–	The **N**umber of **INT**eger records in the set. 0..24.	The total number of records (NO_xxx) in the set is limited to 24.
6	NO_INTL	user	0	–	The **N**umber of **INT**eger **L**ong records in the set. 0..24.	The total number of records (NO_xxx) in the set is limited to 24.
7	NO_REAL	user	0	–	The **N**umber of **REAL** records in the set. 0..24.	The total number of records (NO_xxx) in the set is limited to 24.

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
9	USER	user	0	–	**USER**. 1=Data Set Communication 2=ExCom	–
10	SOURCE	user	RECEIVE	–	**SOURCE**. Defines the direction of the communication. 0=RECEIVE 1=SEND	Not used by ExCom.
12	BLOCKED	user	0	B(r/w)	1=transmission or reception **BLOCKED** by PC, for example.	Not used by ExCom.
13	NET	user	1	I(r)	**NET** number of opposite node. 1 - 127.	If SOURCE=Send: destination net. If SOURCE=Receive: transmitting net. Not used by ExCom.
14	NODE	user	1	I(r)	**NODE** number of opposite node is 1-127 for Data Set Communication, 1-99 for ExCom. (–3 see manual for board DSCA 180X.)	If SOURCE=Send: destination node. If SOURCE=Receive: transmitting node. Not used by ExCom.
15	SCAN_FTR	user	–	–	Transmission interval, 1..127 in steps of the DSC value=0,5 s, unless changed by the APP command.	Transmitting and receiving DS-elements should have the same value. Not used by Excom.
18	SORT_REF	user	YES	–	**SORT REF**erences. 0=NO 1=YES	If Yes then all DAT references are sorted in the following order: DAT(B), DAT(I), DAT(IL), DAT(R)
11	VALID	system	–	B(r/w)	**VALID**. 1=DATa has been updated. 0=Data has not been received within 3×SCAN_FTR. 1=data has been sent 0=data has not been sent	Receiving Data Set. Not used by ExCom. Sending Data Set. Reset by user.
17	ERR	system	–	–	**ERR**or. 1=wrong size 1=no connection 0=no error	Receiving Data Set. Sending Data Set.

Value references



Terminal Description, Value references

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
8(1)	REF1	user	*See Remarks*	–	**REF**erence: Name of connected DAT element (number **1**).	If you name the Data Set ”FORMULA” and set NO_BREC, NO_INTL and NO_REAL to 1, then the names of the connected DAT elements will be: FORMULA.B1 FORMULA.I1 FORMULA.IL1 FORMULA.R1
8(2)	REF2	user	*See Remarks*	–	**REF**erence: Name of connected DAT element (number **2**).	
:	:	:	:	:	:	
8(24)	REF24	user	*See Remarks*	–	**REF**erence: Name of connected DAT element (number **24**).	

Creation of DAT Elements

When you create a Data Set Descr data base element and specify the number of Boolean records, Integer records etc. the system will automatically create the corresponding DAT data base elements. The name of the Data Set Descr element will be used as the first part of the DAT element name. If you later on change the name of the Data Set Descr element, the NAMEs of the DATs will not automatically change.

It is possible to make reference to existing DAT elements when creating the Data Set Descr element. These references will automatically declare the actual number of DAT elements to create.

The number specifications are justified if the number of references exceeds the specifications.

Later, you can pick up an old Data Set Descr element and delete references in pictures 2 and 3 or add references to existing DAT elements. When leaving the Data Set Descr element the DAT references is sorted in order B, I, IL, R without any empty REFx, if SORT_REF=Yes.

In order to add a reference, you type the NAME of the DAT element on an empty reference line. To add a new and delete an old reference you type the new NAME on the line of the old reference. To delete an old reference type a dot on the line of the old reference.

To delete the DAT element itself – refer to DAT element data sheet.

It is not possible to delete Data Set Descr elements. These elements are inactivated by setting ACT=0. In addition it may be desirable to delete the DAT element references. An inactive Data Set Descr element may be reactivated by setting ACT=1 and by restoring the DAT element references if these have been deleted.

Do not create more than 2 consecutive Data Set Descr elements with the same scan factor and addressed to one particular destination node. The communication system may overflow and the Data Sets will not be sent until the next scan interval if more than two such elements are created.

Function

Transmission control

The terminal ACT controls whether the Data Set will be transmitted or not. For Data Set Communication you may use the BLOCK terminal to block the data set to temporarily block transmission or to avoid change of the DAT elements.

The terminal SCAN_FTR controls the transmission interval. The terminal should have the same value for the transmitting and the receiving element. In the receiving element a time-out interval of 3×SCAN_FTR is used after which the VALID terminal is cleared to 0 if no update has occurred.

IDENT is the unique identification used by the system. IDENT must be equal for corresponding elements in sending and receiving node, and must be unique in both nodes. Data Set Communication use positive numbers, Excom negative.

See the PC element SENDREQ for information about event controlled execution of the Data Set.

Data Set Communication transmission

When you activate a Data Set Descr data base element to send its data to an ABB Master Advant Controller 400 Series in MasterNet, you must make sure that:

ACT	=	1
USER	=	1
SOURCE	=	S
BLOCKED	=	0
SCAN_FTR	=	desired repeat interval of transmission
IDENT	=	a positive number 1 - 255
NET	=	Net number of receiving Node
NODE	=	Node number of receiving Node.

IDENT, NET, SOURCE and NODE together form a unique identity. New Data Set Descr elements may be added after system init.

A corresponding Data Set with the same IDENT and with the NET and NODE numbers of the transmitting Node must exist in the receiving end, and it must be set up for reception. The DAT element references must correspond in number and types.

Data Set Communication reception

When you activate a Data Set Descr data base element to receive data via MasterNet, you must make sure that:

ACT = 1

USER = 1

SOURCE = R

BLOCKED = 0

SCAN_FTR = repeat interval of transmission

IDENT = a positive number 1.255

NET = Net number of transmitting Node

NODE = Node number of transmitting Node

IDENT, NET, SOURCE and NODE together form a unique identity.

A corresponding Data Set with the same IDENT and with the NET and NODE numbers of the transmitting Node must exist in the transmitting end, and it must be set up for transmission.

VALID is set for the DS element and its DAT elements when proper data is received, and is reset if no data is received within the time-out of 3×SCAN_FTR, (maximized to 122.5 secs=255×base DS time).

All received Data Sets should be entered in the top of the Data Set file with the lowest SCAN_FTR value first in order to reduce the CPU load.

ExCom Communication

The following three conditions must be fulfilled to make an external computer able to read or write the data of a Data Set Descr data base element:

ACT = 1

IDENT = the number of the requested Data Set (–127..–1)

USER = 2

NOTE

The Data Set is accessed by IDENT number, not record number.

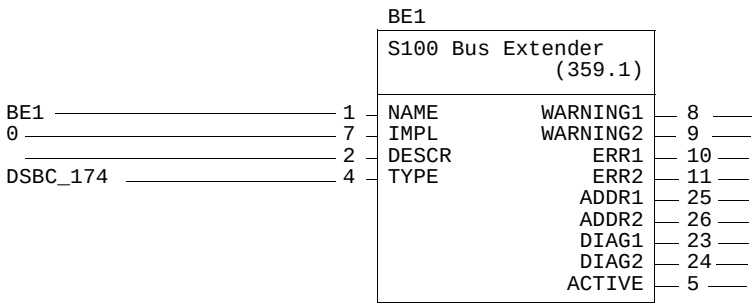
S100 Bus Extender DSBC 174, DSBC 176

Summary

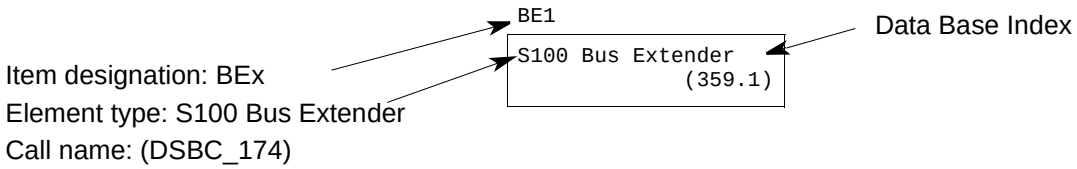
The S100 Bus Extender data base element specifies a bus extension to S100 I/O boards for the Advant Controller 450. The data base elements indicates diagnostics for the communication and the bus extension.

- DSBC 174: S100 I/O bus redundancy (can also be used for single S100 I/O bus).
- DSBC 176: Single S100 I/O bus.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	BEx	-	Unique **NAME** of the element.	20 character string.
7	IMPL	user	0	B(r)	0=the module is not used 1=the module is **IMPL**emented	Default, IMPL=0 Change only possible in configuration mode.
2	DESCR	user	–	–	**DESCR**iption.	20 character string.

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
4	TYPE	user	DSBC_174	–	**TYPE** designation of the bus extender board DSBC 174 or DSBC 176.	Change only possible in configuration mode.
8	WARNING1	system	–	B(r)	**WARNING** flag **1** indicating non-fatal errors.	-
9	WARNING2	system	–	B(r)	**WARNING** flag **2** indicating non-fatal errors.	Not valid for DSBC 176
10	ERR1	system	–	B(r)	**ERR**or flag **1** indicating error on S100 I/O extension bus 1 (left).	–
11	ERR2	system	–	B(r)	**ERR**or flag **2** indicating error on S100 I/O extension bus 2 (right).	Not valid for DSBC 176.
25	ADDR1	predef	*Depending on instance number*	–	**ADDR**ess of the left bus extender, the address is the same as ADDR2 except MSB (bit 7) which is 0 in ADDR1.	This is the addresses the user shall strap on the bus extender boards. ADDR1 is the address of the left bus extender and ADDR2 is the address of the right bus extender. The addresses are presented as strings of 1's and 0's on the data base element terminals. ADDR2 is not valid for DSBC 176.
26	ADDR2	predef	*Depending on instance number*	–	**ADDR**ess of the right bus extender, the address is the same as ADDR1 except MSB (bit 7) which is 1 in ADDR2.	
23	DIAG1	system	H'0	–	Left bus extender module **DIAG**nostics.	The DIAG terminals present detailed diagnostic information describing operation state of S100 I/O bus extenders. More than one bit can be set at the same time, in that case the strings are presented as a comma separated list. DIAG2 is not valid for DSBC 176.
24	DIAG2	system	H'0	–	Right bus extender module **DIAG**nostics.	
5	ACTIVE	system	–	I(r)	**ACTIVE** S100 I/O bus extender when using redundancy. 1=left is active. 2=right is active.	Updated at start-up and in the event of a CPU switch-over.

Function

The S100 Bus Extender data base element specifies the bus extender boards used in the I/O subrack of Advant Controller 450.

The main functions of the element are:

- Implement new S100 I/O subrack in the system.
- To indicate the addresses for the bus extenders included in one S100 I/O subrack.
- To indicate diagnostics.

The technical description of the bus extender boards can be found in the manual *S100 I/O Hardware Reference Manual*.

Implementation

Use the following procedure to add S100 I/O subracks to the system.

Note! New S100 I/O subracks can only be implemented in configuration mode.

- If S100 I/O bus redundancy will be used set terminal S100CONN in data base element AC450 to REDUNDANT. Otherwise it shall be set to SINGLE. This is only done the first time S100 I/O bus extension is configured, it is not allowed to mix single and redundant S100 I/O bus extension in one system.
- Enter the first instance of the bus extender data base element where IMPL is set to 0 (not implemented).
- Set the switches on the bus extender board according to the address given in the data base element (ADDR1 and ADDR2).
- Select board type by using the terminal TYPE.
- Enter NAME (default name is BEx where x is instance number) and DESCRIPTION.
- Set IMPL = 1.

Board Address

ADDR1, ADDR2 The terminals ADDR1 and ADDR2 shows how the address switches on the bus extender board shall be set. MSB: Address bit 7 is leftmost. LSB: Address bit 0 is rightmost.

Example:
The first left bus extender is located at hexadecimal address 0 = 0000 0000.
The first right bus extender is located at hexadecimal address 80 = 1000 0000.

Diagnostics

The S100 Bus Extender data base element indicates diagnostic information for bus extenders used in one S100 I/O subrack. With S100 I/O Bus redundancy up to two bus extenders are used. The ERR1 and ERR2 terminals indicates fatal errors. WARNING1 and WARNING2 indicates non-fatal errors. The DIAG1 and DIAG2 terminals specifies a more detailed description of what causes the error or warning indication. One or more diagnostics indicators may be set. An active and correct bus extender board is indicated with the string “RUN”.

S100 I/O Bus Extender data base element diagnostic information

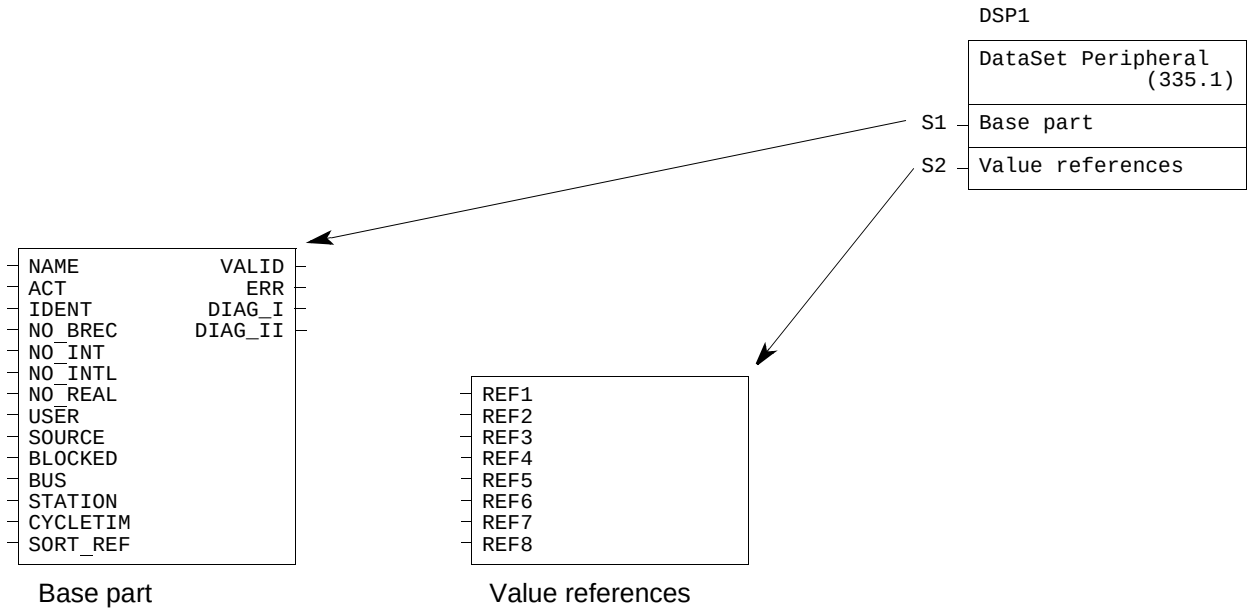
Condition	WARNING1/ WARNING2	ERR1 /ERR2	DIAG1/ DIAG2	Action
Not OK	–	1	Not OK	The bus extender is stopped or communication with the bus extender is lost. If the bus extender is not stopped: Check the LEDs on the bus extender or the connection with the CPU.
The bus extender is active	–	–	RUN	The bus extender is active and running.
Parity error in message from bus extender	–	1	PE	Check the connection with the CPU.
Regulator failure in this I/O subrack	1	–	RF	Check the power supply.
Regulator missing in this I/O subrack	1	–	RM	Check the power supply.
Fan failure in this I/O subrack	1	–	FF	Check the I/O subrack fan.
Voltages is not correct in the I/O subrack	–	1	DCN	Check the power supply.
The bus extender is error marked	–	1	ERR	Replace the bus extender.
STOP bus extender is requested	–	–	RS	This condition is indicated when the switch on the front of the bus extender is set to STOP and the system has not yet accepted the bus extender stop.

DataSet Peripheral DSP

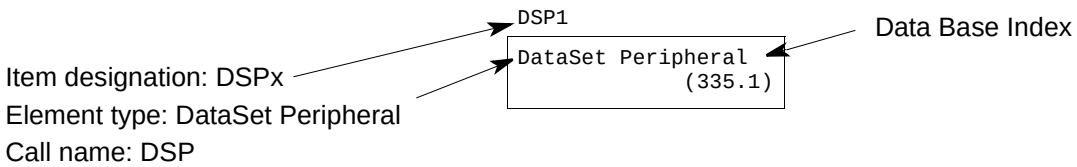
Summary

The DataSet Peripheral data base element is a data set function for communication between Advant Controller 400 Series and Advant Controller 110 via Advant Fieldbus 100. The performance of DataSet Peripheral is similar to the performance of the Data Set.

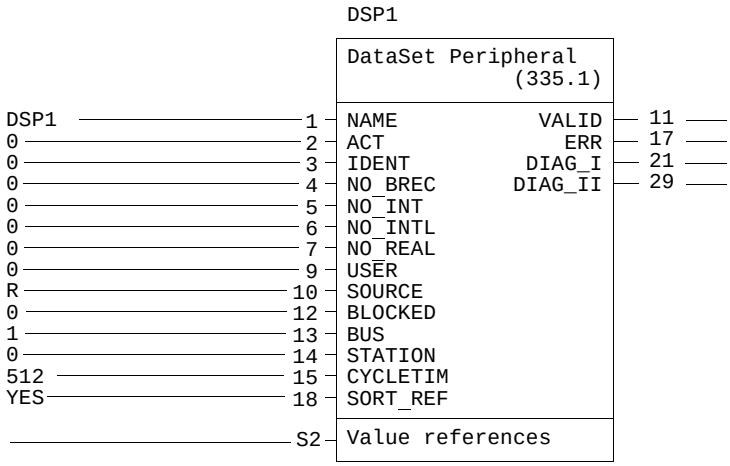
Overview



Head



Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DSPx	–	Each DataSet Peripheral signal must have a unique **NAME**.	Max. 7 characters.
2	ACT	default	1	B(r)	0=the element is spare 1=the element is **ACT**ivated	For ACT=0 data can not be accessed.
3	IDENT	user	0	–	**IDENT**ity, form together with STATION the signal identity on the bus. Allowed values: 1..50. (1)	For ACT=1: IDENT=0 is not allowed.
4	NO_BREC	user	0	–	The **N**umber of **B**oolean **REC**ords in the set, 0..8.	The total number of references in a set is limited to 8. Different types of references can be mixed. (2)
5	NO_INT	user	0	–	The **N**umber of **INT**eger records in the set, 0..8.	–
6	NO_INTL	user	0	–	The **N**umber of **INT**eger **L**ong records in the set, 0..8.	–
7	NO_REAL	user	0	–	The **N**umber of **REAL** records in the set, 0..8.	–
9	USER	default	0	–	**USER**. 0=DataSet Peripheral 4=Fast DSP Communication, i.e. use of PC elements DSP-S and DSP-R.	–

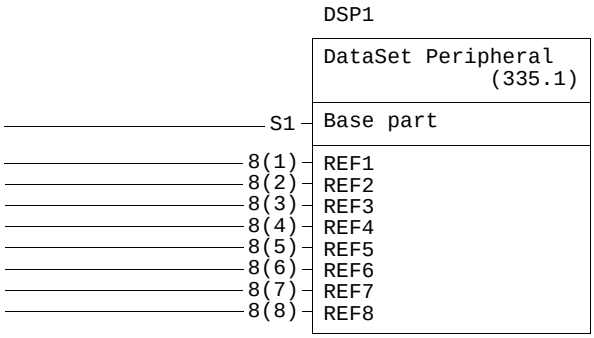
Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
10	SOURCE	user	R	–	**SOURCE**. Defines the direction of the communication. R=RECEIVE (=0) S=SEND (=1)	–
12	BLOCKED	user	0	B(r/w)	Transmission or reception **BLOCKED**, for example by PC.	Send: The time before the receiving end is notified is up to 6 seconds + 5*CYCLETIM.
13	BUS	user	1	–	**BUS** number of the used bus.	1 - 255
14	STATION	user	0	–	**STATION** number, forms together with IDENT the signal identity on the bus. Allowed values: 1..80. (1) Recommended to follow the station number in the sending DSP.	For ACT=1: STATION=0 is not allowed.
15	CYCLETIM	user	512	–	Bus **CYCLE TIM**e. Defines how often a DSP is transmitted on the bus. Allowed values are: 32, 64, 128, 256, 512, 1024, 2048 and 4096 (that is, 5..12 powers of 2). In case of FastDSP (USER=4) the following values are also allowed: 1, 2, 4, 8, 16.	SET CYCLETIM ≥ basic cycle time on the APP command - if not basic cycle time overrides CYCLETIM.
18	SORT_REF	user	YES	–	**SORT REF**erences. 0=NO, 1=YES	If YES then all data references are sorted in the following order: DAT(B), DAT(I), DAT(IL), DAT(R).
11	VALID	system	–	B(r)	**VALID**. Receiving: 1=has been updated 0=invalid	–
17	ERR	system	–	B(r)	**ERR**or.	–
21	DIAG_I	system	–	–	Configuration **DIAG**nostics for first or single CI52x.	The output may be more than one value.
29	DIAG_II	system	–	–	Configuration **DIAG**nostics for second CI522 (redundant AF 100).	The output may be more than one value.

(1) IDENT and STATION form the signal identity. The signal identity must be equal for the corresponding elements in both the sending and receiving ends.

(2) Reference types will be checked according to the following formula: NO_BREC + NO_INT + NO_INTL + NO_REAL ≤8
Multiple references to the same DAT element are counted separately.

Value references



Terminal Description, Value references

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
8(1)	REF1	user	*See Remarks*	–	**REF**erence: Name of connected DAT element (number **1**).	If the DataSet Peripheral is named “DSP1” and NO_BREC, NO_INT, NO_INTL and NO_REAL are set to 1, the resulting DAT element names are: DSP1.B1, DSP1.I1, DSP1.IL1, DSP1.R1.
8(2)	REF2	user	*See Remarks*	–	**REF**erence: Name of connected DAT element (number **2**).	
:	:	:	:	:	:	
8(8)	REF8	user	*See Remarks*	–	**REF**erence: Name of connected DAT element (number **8**).	

Creation of DAT Elements

See the data base element Data Set Descr.

Function

Transmission control

The terminals ACT and/or BLOCKED control whether the DataSet Peripheral data base element will be transmitted or not. CYCLETIM and BLOCKED can be updated independently on the ACT terminal value in on line as well as in off line mode.

CYCLETIM shall be greater than or equal to the basic cycle time value. The transmission interval is controlled by CYCLETIM. CYCLETIM should have the same value for the transmitting and the receiving elements. In the receiving element a time-out interval of 4*CYCLETIM is used after which the VALID terminal is cleared if no update has occurred.

If CYCLETIM is less than the basic cycle time value the bus transmission interval and the receiving element time out are controlled by CYCLETIM. The basic cycle time controls the DataSet Peripheral scanning and by this the intervals between the updates. The basic cycle time value can be set with the APP command

IDENT and STATION forms the signal identity which must be equal for corresponding elements in sending resp. receiving stations and must be unique within each station. A signal identity is only allowed to be used by one sending element on the bus but by several receiving elements.

STATION is not hard bound to the station number in which the sending DataSet Peripheral data base element is located, but it is recommended to use the same number for the sending element.

S800 I/O Stations used reserves all identities (1..50) for the used station number, that is all signal identities formed by IDENT = 1..50 and STATION = S800 I/O Station number. Due to this a DSP can not be defined with the same STATION number as a S800 I/O Station. The other way around an S800 I/O Station can not use a station number if any sending DSP, on the bus, is defined with the same STATION number.

DataSet Peripheral transmission

When activating a DataSet Peripheral data base element to send its data to an Advant Controller 400 Series or an Advant Controller 110 using Advant Fieldbus 100 the following terminals must be updated as:

ACT	=	1
SOURCE	=	S
BLOCKED	=	0
CYCLETIM	=	desired transmission interval on the AF 100 bus CYCLETIM shall be greater than or equal to the basic cycle time value.
IDENT	=	a positive number 1 - 50.
BUS	=	number of the bus connected to the receiving data sets stations.
STATION	=	a positive number 1 - 80. Recommended but not forced to be the same as the station’s number.

A corresponding DataSet Peripheral data base element with the same IDENT resp. STATION and within the same bus must exist in the receiving end. The DAT element references must correspond in number and types.

DataSet Peripheral Communication reception

When activating a DataSet Peripheral data base element to receive data using Advant Fieldbus 100 the following terminals must be updated as:

ACT	=	1
SOURCE	=	R
BLOCKED	=	0
CYCLETIM	=	desired transmission interval on the AF 100 bus CYCLETIM shall be greater than or equal to the basic cycle time value.
IDENT	=	a positive number 1 - 50.
BUS	=	number of the bus connected to the sending data sets stations.
STATION	=	a positive number 1 - 80.

A corresponding DataSet Peripheral element with the same IDENT resp. STATION and within the same bus must exist in the transmitting end. The DAT element references must correspond in number and types.

VALID is set for the DataSet Peripheral element and its DAT elements when data is received properly and is reset when no data has been received within the time-out of 4*CYCLETIM.

DataSet Peripheral Configuration Diagnostics

The diagnostics terminal displays the diagnostics of the DSP configuration. The diagnostics data is divided in two classes, configuration state resp. error code. The configuration state indicates the state of the DSP configuration. One configuration state is always displayed. Error code specifies the error in case of state configuration error (CE) or might indicate transfer disturbance at state OK. Several error codes might be displayed simultaneously.

The diagnostics terminal is updated after the CI520/CI522 has become operational or erroneous. In case the DSP ACT or BLOCKED terminal value is changed, the diagnostics terminal is anew updated. The terminal is updated until the first data is sent from/received to the DSP or state CE (configuration error) is entered. The following table explains the DIAG_I and DIAG_II terminal output for different situations.

Diagnostic Output

Class	Code	Explanation	Action
Configuration state	NC	The DSP is not configured or under configuration.	If the DSP is expected to be configured: - Check if the bus is defined and is working. - Check the ERR terminal and system messages. - Check that the ACT terminal is set and BLOCKED is not.
	PSV	The DSP is passive that is deactivated.	The configured DSP is set to state active/passive with the DSP ACT or BLOCKED terminal.
	RDY	The DSP is Ready.	*CURRENTLY NOT USED.*
	OK	The DSP is configured or active.	**Note**! Update of DIAG is stopped after the first data is sent/received.
	CE	The configuration of the DSP has failed.	See error code.
Error code	MS	Multiple Sources. The signal identity, that is STATION and IDENT, is already occupied, by another DSP or S800 I/O Station on the bus.	Give the DSP another STATION-IDENT combination. **Note**! An S800 I/O Station reserves all signal identities formed by the defined station number and IDENT = 1..50. **Note**! A previous change of station numbers might be the cause of Multiple Sources error. If so the error is remedied by, at the same time, removing the communication interfaces of all stations for some seconds.
	SNC	Signal identity is Not Configured. The DSP is not configured, probably due to overload avoidance.	Check the configuration of the bus. To many to fast or to big DSPs in combination with S800 I/O Stations are defined.
	ISI	Invalid Signal Identity, that is STATION and IDENT.	Give the DSP another STATION-IDENT combination.
	CTO	Configuration time out.	
	TRD	Transfer disturbance.	One or several data packets have not been sent or received. As the update of the terminal is stopped when the first data is sent/received a later transfer disturbance might not be indicated on the terminal.
	DTO	Device time-out.	

Fast DataSet Peripheral communication with PC elements

As an alternative to using DSP/DAT data base elements for data transfer between AC 400 nodes, the PC elements DSP-S and DSP-R could be used. In this case the data base element DSP is used for configuration of communication, but data is sent/received directly by the PC elements. An advantage of this solution is that the transfer time is reduced.

The PC elements in one AC 400 node could also be used for communication towards ordinary DSP in another controller (AC 70, AC 110, AC 400) node if full size (5-8 DATs) are configured.

For more details about Fast DSP, see *PC Elements Advant Controller 400 Series Reference Manual*.

Transfer performance of cyclic data transfer (DSP) on AF 100

Data is expected to be used by a user application PC program. The maximum delay time for transfer of data from one AC 400 Series station to another can be expressed as follows:

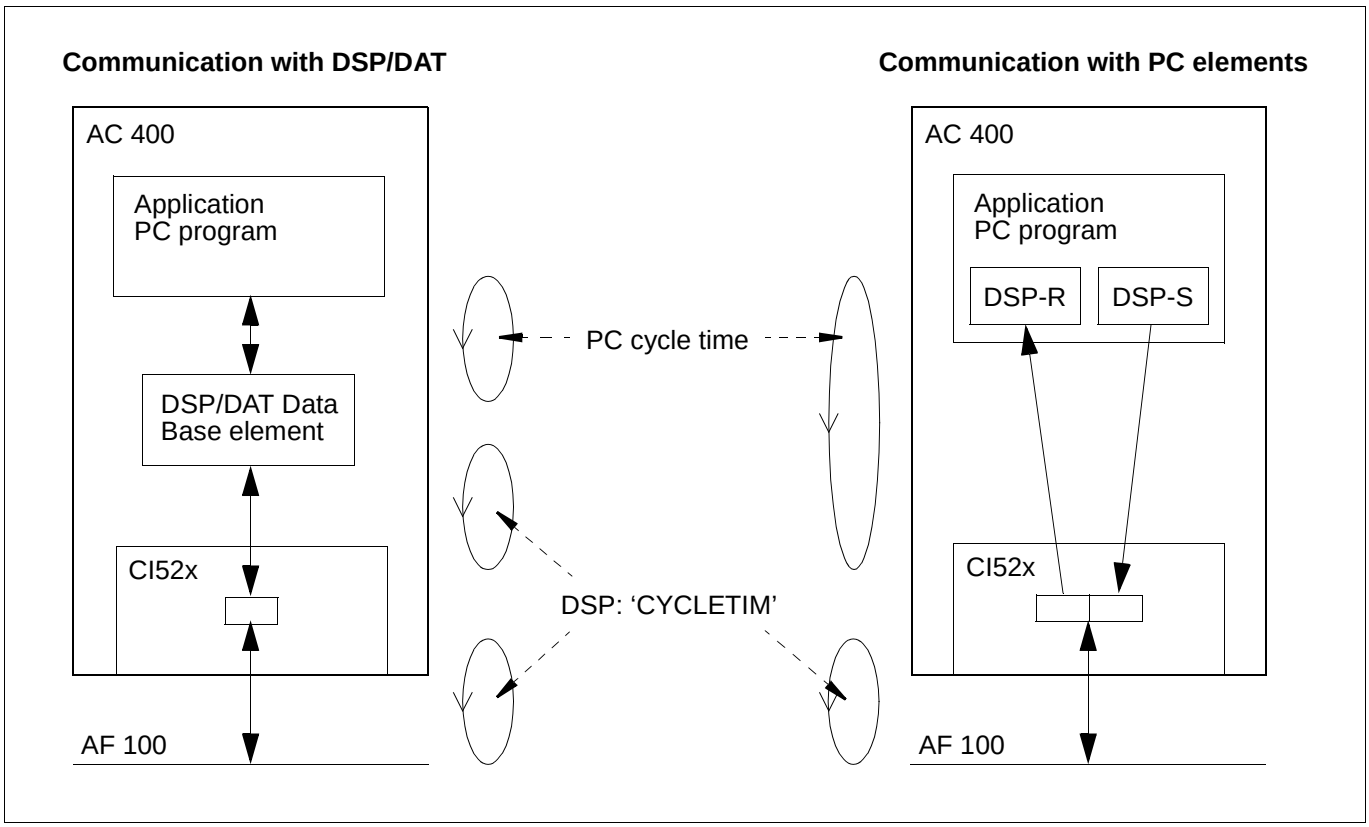
- Communication with DSP/DAT:

  (3 x CYCLETIM) + PC cycle time in receiver.

- Communication with PC elements:

  CYCLETIM + PC cycle time in receiver.

DSP Communication, Data Flow



DataSet Peripheral AF 100 Load generation

The CYCLETIM terminal defines the cycle time, of the DSP, to be used on Advant Fieldbus 100. The selection of cycle time (CYCLETIM) shall be chosen with care due to bus bandwidth. The maximum load on AF 100 is 70% for (cyclic) process data transfer. For additional information about AF 100 see *Advant Fieldbus 100 User's Guide*.

The following table describes the approximate load generated by one DSP for all available cycle times:

Generated AF 100 load per DSP in percent at different cycle times on CYCLETIM

DSP size	CYCLETIM for DSP (ms)												
	1	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**4096**
1 DAT	8.800 (1)	4.400 (1)	2.200 (1)	1.100 (1)	0.550 (1)	0.275	0.138	0.069	0.034	0.017	0.009	0.004	0.002
2 DATs	10.800(1)	5.400 (1)	2.700 (1)	1.350 (1)	0.675 (1)	0.338	0.169	0.084	0.042	0.021	0.011	0.005	0.003
3-4 DATs	15.600(1)	7.800 (1)	3.900 (1)	1.950 (1)	0.975 (1)	0.488	0.244	0.122	0.061	0.030	0.015	0.008	0.004
5-8 DATs or PC elements	25.200	12.600	6.300	3.150	1.575	0.788	0.394	0.197	0.098	0.049	0.025	0.012	0.006

(1) Not available for AC 400 Series

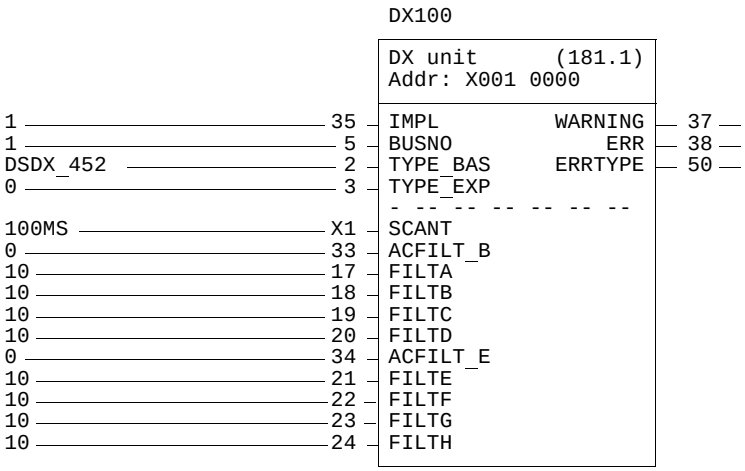
DX unit DX

Summary

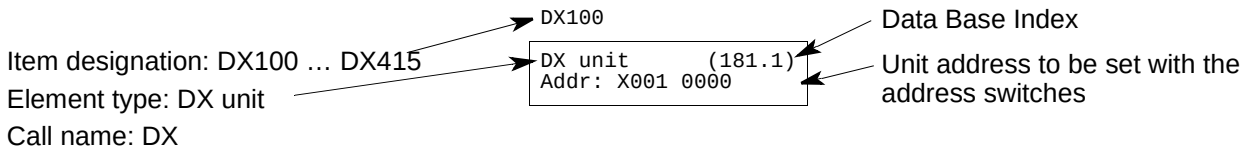
The DX unit data base element holds the data needed to define a digital S400 I/O unit connected to MasterFieldbus.

The element is superior to the Digital Input and Digital Output data base elements for the signals of the unit.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
35	IMPL	user	1	B(r)	**IMPL**emented. 0=The element is spare. 1=The unit is implemented.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
5	BUSNO	user	*	I(r)	The **N**umber of the **BUS** to which the unit is connected.	–
2	TYPE_BAS	user	DSDX _452	–	Board **TYPE** of **BAS**ic unit: DSDX_452 or DSDI_452, DSDX_454 or DSDI_454.	TYPE DSDX_452 is valid for DSDX_452L and DSDX_454 for DSDX_454L.
3	TYPE_EXP	user	0	–	Board **TYPE** for **EXP**ansion unit: DSDI_451, DSDX_451, DSDI_453, DSDX_453 or 0 (none).	TYPE DSDX_451 is valid for DSDX_451L and DSDX_453 for DSDX_453L.
X1	SCANT	user	100MS	–	**SCAN T**ime interval of input signals: See Introduction, ”Allowed SCANT values”.	–
33	ACFILT_B	user	0	–	1=**FILT**er time is doubled for signal transition to 0. Suitable for **AC** signals. For Base unit inputs (1-32).	–
17	FILTA	user	10	–	**FILT**er time (0..63 ms) for first group of input channels, 1-8.	–
18	FILTB	user	10	–	Same as for FILTA for input channels 9-16.	–
19	FILTC	user	10	–	Same as for FILTA for input channels 17-24	–
20	FILTD	user	10	–	Same as for FILTA for input channels 25-32.	–
34	ACFILT_E	user	0	–	1=**FILT**er time is doubled for signal transition to 0. Suitable for **AC** signals. For **E**xpansion inputs (33-64).	–
21	FILTE	user	10	–	**FILT**er time for input channels 33-40.	–
22	FILTF	user	10	–	Same as for FILTA for input channels 41-48.	–
23	FILTG	user	10	–	Same as for FILTA for input channels 49-56.	–
24	FILTH	user	10	–	Same as for FILTA for input channels 57-64.	–
37	WARNING	system	–	B(r)	**WARNING**. Fault, causing stopped execution.	–
38	ERR	system	–	B(r)	**ERR**or flag indicating error stopping execution.	–
50	ERRTYPE	system	–	I(r/w)	**ERR**or **TYPE**.	See the table for Error Types.

Error Types

Flag E or W indicates whether the element outputs ERR or WARNING are set.

Flag	ERRTYPE	Error
	Not initiated	Illegal BUSNO, IMPL=0 at system init or system not started.
E	Bus controller error	Bus controller board (CI570) is faulty or missing.
E	Communication error	Communication faulty, no reply from unit.
E	TYPE_BAS mismatch	The unit type does not agree with TYPE_BAS.
E	Other error	May be set temporarily during restart.
W	TYPE_EXP fail	Unit type of expansion unit does not agree with TYPE_EXP.
W	Transducer power	Transducer power of base unit fails (fuse?).
	Error Channel A	Error on redundant channel A (modem, cable?)
	Error Channel B	Error on redundant channel B (modem, cable?)
	OK	No error.

The most significant error (uppermost text in table) is given if multiple error occurs.

BUSNO – Bus Number

With this terminal you select the number of the bus that the DX unit is to be connected to.

The lowest bus number with less than 16 units is given as the default BUSNO value.

BUSNO can be changed if the system is in configuration mode.

BUSNO is included as the first digit in the Item designation. The full unit address to be set on the S400 I/O unit is shown in the element head.

Item designation: DXabb — a = bus

Address in binary: xaaa bbbb — b = node on bus
x = hi speed/low speed

Example:

Item designation: DX307

BUSNO: 3

Node on bus: 7

Unit address: x011 0111

Function

More information is to be found in the manual *S400 I/O User's Guide*.

Event Treat EVENT

Summary

The Event Treat data base element defines the event handling in MasterView 800 and Advant Station 500 Series Operator Station. There are 300 EVENT elements available, as described below.

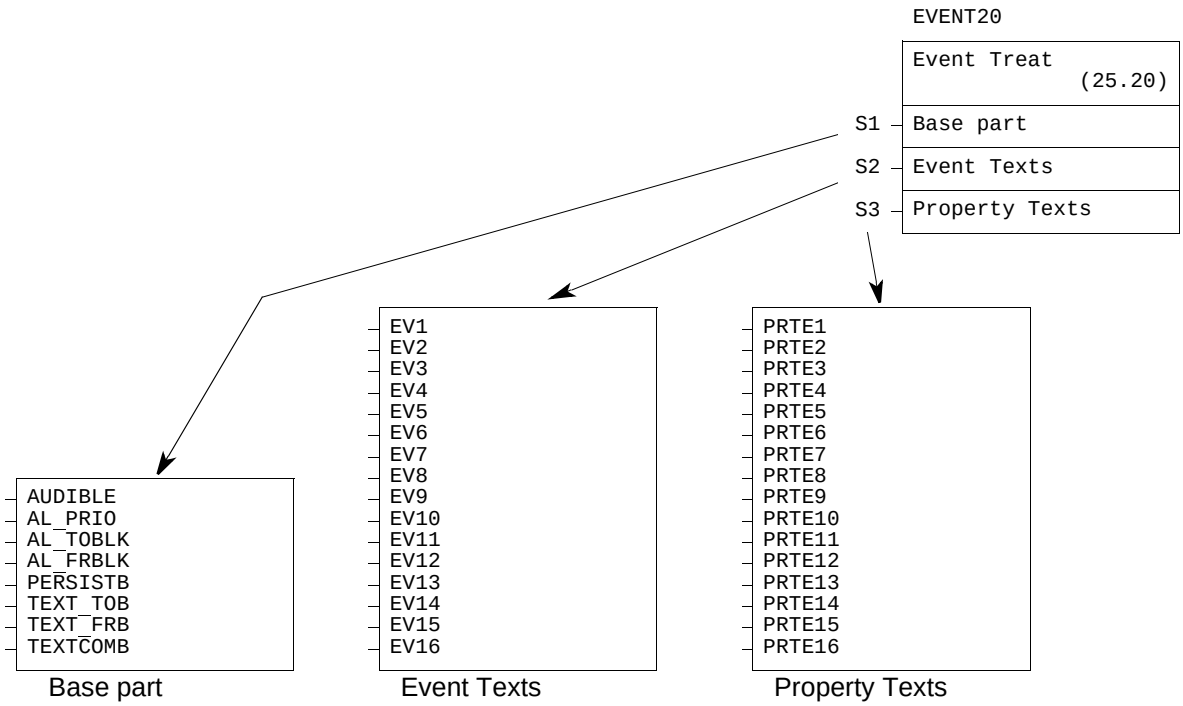
Elements 1-18 are predefined for standard event handling. Elements 19 is reserved for future expansion of the standard handling. Elements 20-300 are available for user defined event handling.

NOTE

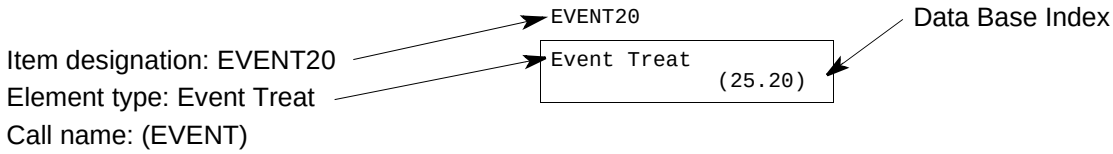
The EVENT1-19 must NOT be changed by the user!

Since the Event Treat elements are parts of the Advant Station 500 Series Operator Station system, you have to set up your Engineering Station for an Advant Station 500 Series Operator Station session and choose ”Advant Station 500 Series Operator Station” and Data Base Element Handling from the available menus.

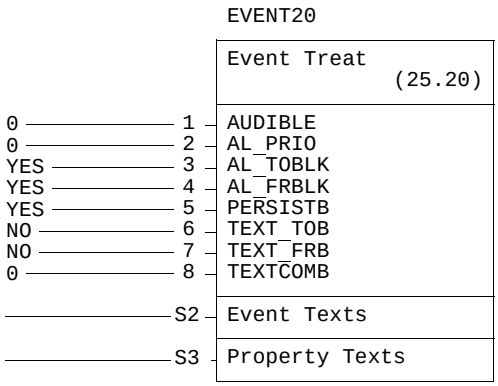
Overview



Head



Base part



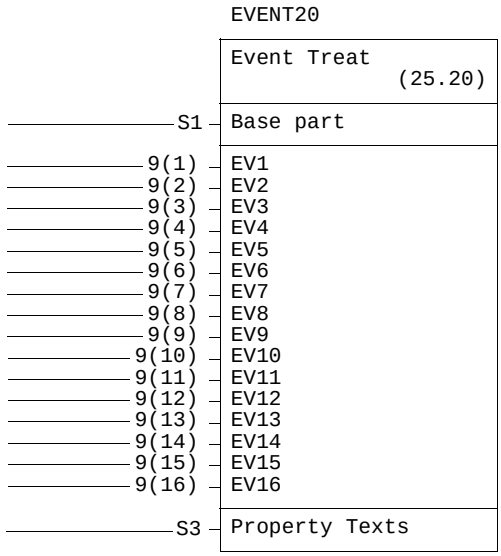
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	AUDIBLE	user	0	–	Choice of external alarm function.	Refer to the table for External Alarm.
2	AL_PRIO	user	0	–	**AL**arm **PRIO**rity. Choice of colors for listing of events and alarms on the Operator Station.	Refer to the table for Color Codes.
3	AL_TOBLK	user	YES	–	**BL**oc**K**s **AL**arm handling of a supervised alarm signal when it makes a 0-->1 transition.	NO=invoke alarm handling for 0-->1 transition.
4	AL_FRBLK	user	YES	–	**BL**oc**K**s **AL**arm handling of a supervised alarm signal when it makes a 1-->0 transition.	Most alarm signals are active high. 1-->0 means then back to normal. AL_FRBLK should therefore normally be set to YES.
5	PERSISTB	user	YES	–	Flag for **B**locking of **PERSIST**ent alarm presentation in the alarm list, after alarm acknowledgment.	Should be set to NO when alarm handling either way is required.

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
6	TEXT_TOB	user	NO	–	**B**locks generation of **TEXT** in lists and printouts when the event changes from 0-->1.	YES=blocked.
7	TEXT_FRB	user	NO	–	**B**locks generation of **TEXT** in lists and printouts when the event changes from 1-->0.	YES=blocked.
8	TEXTCOMB	user	0	–	Selection of **TEXT COMB**ination codes, 0-24.	See the table for Text Combination Codes.

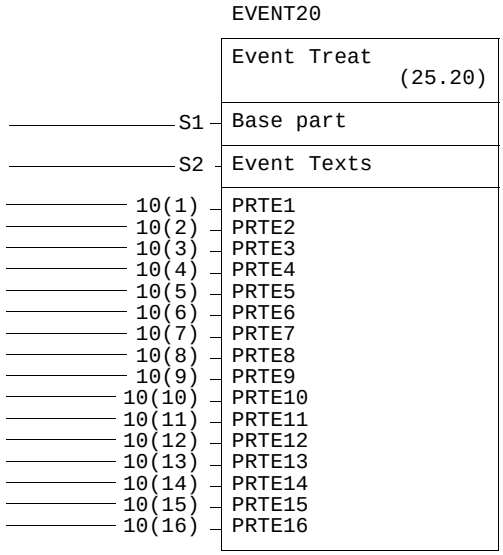
Event Texts



Terminal Description, Event Texts

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
9(1)	EV1	user	–	–	Text field available for 16 user defined **EV**ent texts. Max. 11 characters.	Selected by TEXTCOMB.
9(2)	EV2	user	–	–		
:	:	:	:	:		
9(16)	EV16	user	–	–		

Property Texts



Terminal Description, Property Texts

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
10(1)	PRTE1	user	–	–	Text field available for 16 user defined **PR**operty **TE**xts. Max. 8 characters.	Selected by TEXTCOMB.
10(2)	PRTE2	user	–	–		
:	:	:	:	:		
10(16)	PRTE16	user	–	–		

Color Codes (for AL_PRIO)

Code	Color	Remarks
1	white	–
2	red	–
3	yellow	–
4	green	–
5	cyan	–
6	blue	normally used by the control system
7	magenta	normally used by the control system

Audible Alarm (for AUDIBLE)

For Advant Station 500 Series Operator Station

Code	Function option
0	No external alarm.
1	External alarm, depends on the configuration.

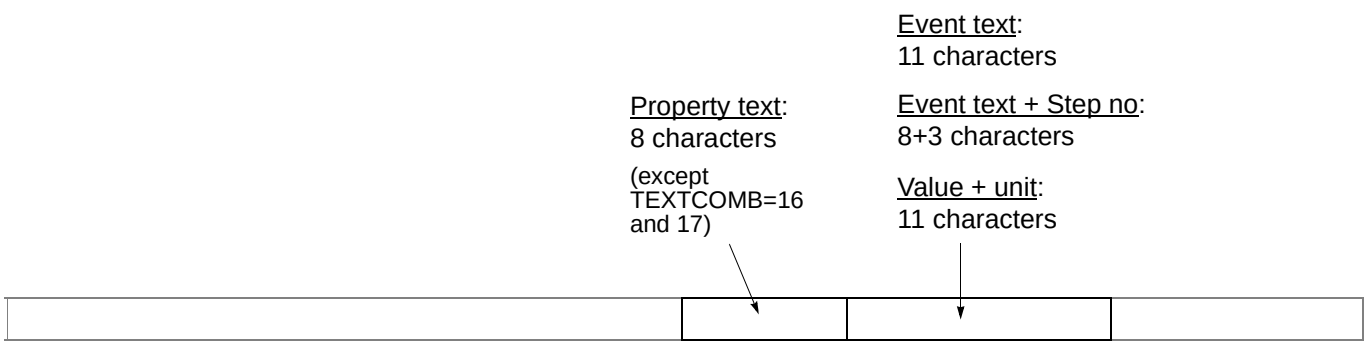
For MasterView 800

Code	Function option
0	No external alarm.
1	Audible alarm in the keyboard.
2	Activation of output 1 on the digital output board.
3	Sending of a start pulse on output 2 and a stop pulse on output 3 when the key SILENCE is pushed
4	Sending of a start pulse on output 4 and a stop pulse on output 5 when the key SILENCE is pushed.
5	Activation of output 6 on the digital output board.
6	Sending of a start pulse on output 7 and a stop pulse on output 8 when the key SILENCE is pushed.
7	Sending of a start pulse on output 9 and a stop pulse on output 10 when the key SILENCE is pushed.

Text Combination Codes

Integer to select if Standard or User defined property text and Event text shall be used.

Maximum number of characters for the property and event texts is as follows:



Formats for property and event texts

TEXT COMBination code	Property text	Event text	
0	Standard	Standard	
1		User defined	
2	Standard		Value + unit
3	Standard	User defined	
4	User defined	Standard	
5	User defined	User defined	
16	User defined (1)	Standard	
17	User defined (1)	User defined	
18 (2)	Standard	Standard	+ Step no
19 (2)	Standard	User defined	+ Step no
20 (2)	User defined	Standard	+ Step no
21 (2)	User defined	User defined	+ Step no
24 (3)	Standard		Value + unit

(1) Suitable for long property texts (up to 20 characters).
(2) Specially adapted for the function unit Sequence (SEQ).
(3) Similar to TEXTCOMB=2, but only events caused by a process event will be entered in the list.

NOTE

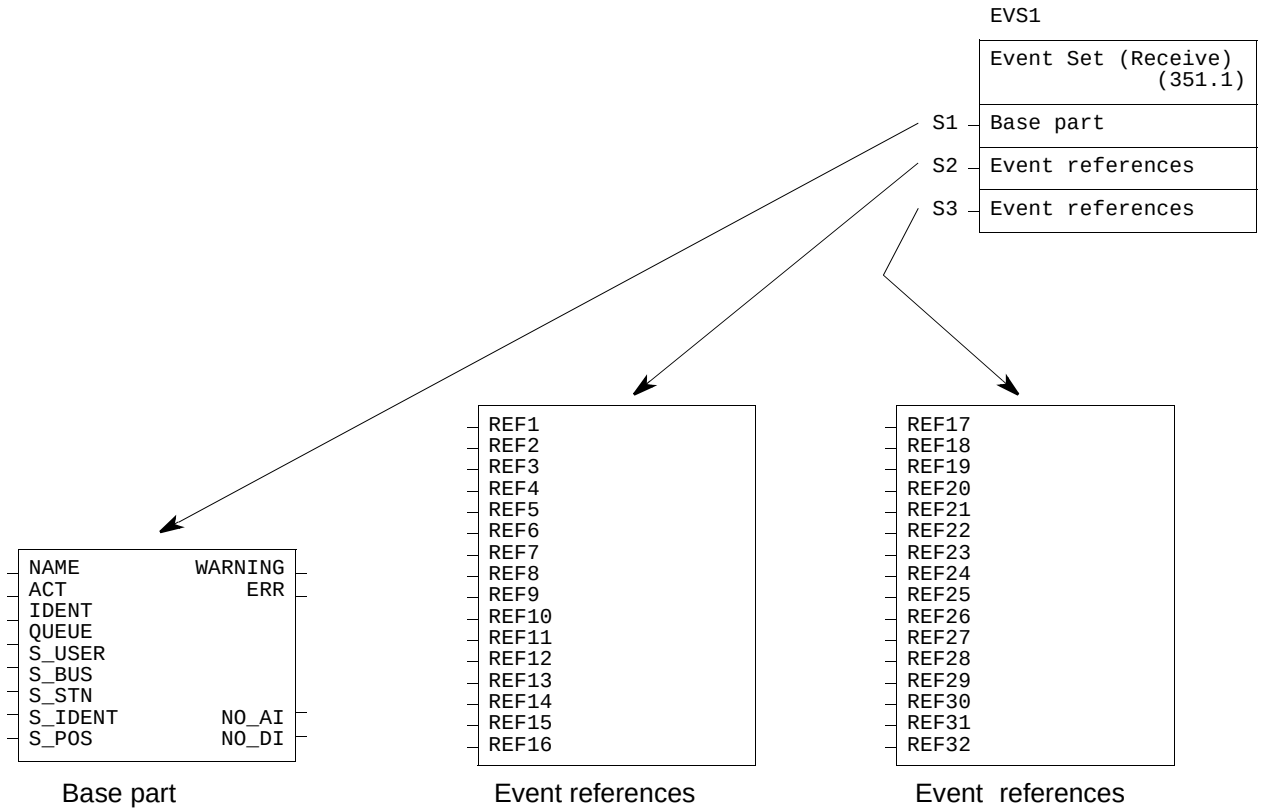
Description can not be displayed if long Property texts are used (TEXTCOMB 16 and 17)

Event Set (Receive) EVS(R)

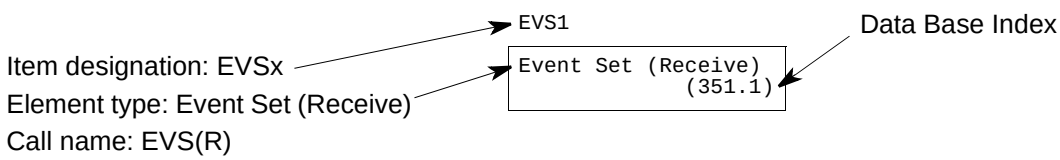
Summary

The Event Set (Receive) data base element specifies a set of events to be received from an other station, for example Advant Controller 110. The element contains up to 32 references to AI or DI Event channel elements (AIEV and DIEV). The Event Set (Receive) element must be configured equal in respect to the number of references and their type (AI or DI) to the corresponding Event Set (Send) or Event Set (Transit) element in the sending station.

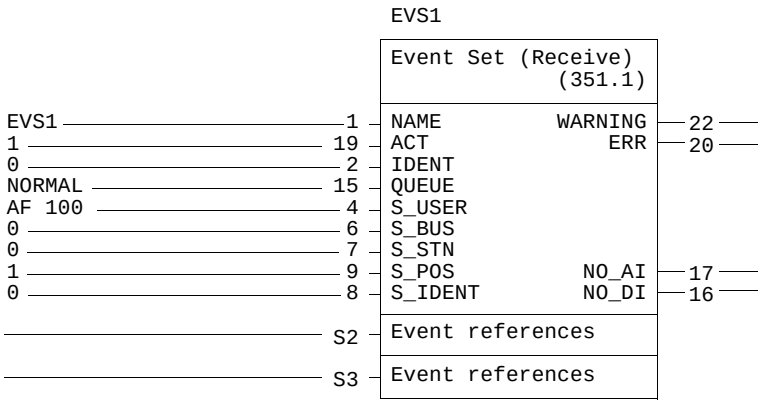
Overview



Head



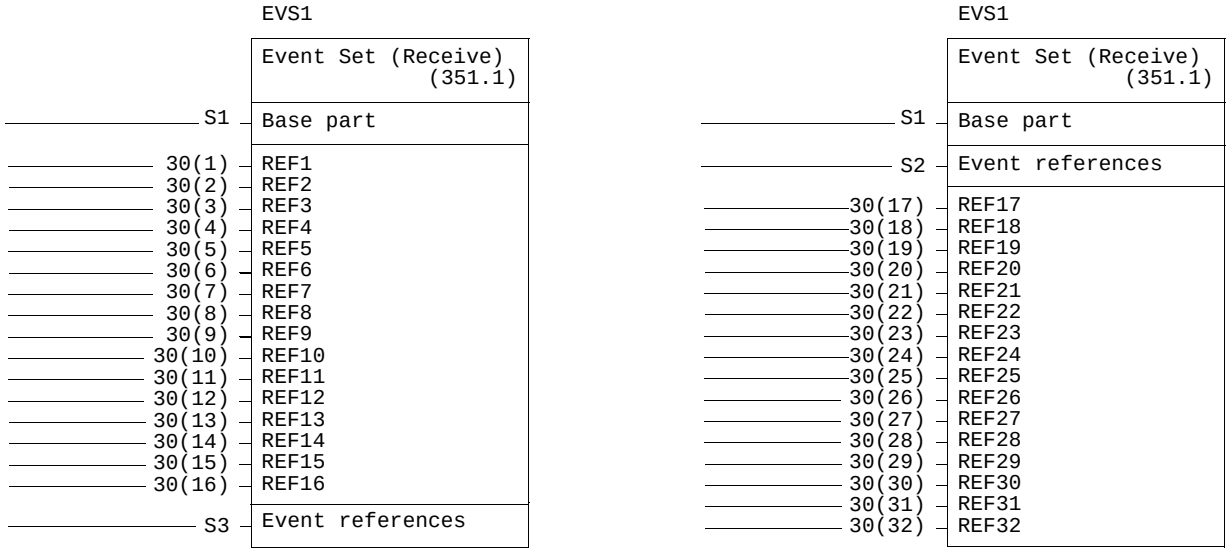
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	EVSx	–	Unique **NAME** of the event set.	Max. 20 characters.
19	ACT	user	1	B(r/w)	0=Event Set is spare. 1=Event Set is **ACT**ive.	–
2	IDENT	user	0	–	Unique **IDENT**ity of this event set.	Not used by the system.
15	QUEUE	user	NORMAL	–	Size of event **QUEUE**.	NORMAL only value.
4	S_USER	user	AF 100	–	**S**ource **USER**: AF 100 or RCOM	–
6	S_BUS	user	0	–	**S_BUS** and **S_STN** denote from where to receive the events in the set (Source). **S_POS** is the position of the processor module (if redundant).	RCOM users can use net number on S_BUS and node number on S_STN. S_POS range: 0 - 10.
7	S_STN	user	0	–		
9	S_POS	user	1	–		
8	S_IDENT	user	0	–	**S**ource **IDENT** of the event set.	–
22	WARNING	system	–	B(r)	**WARNING** flag indicating non-fatal errors. One or more event channel elements may be configured wrong.	Verify configuration of event channels to corresponding EVS(S).
20	ERR	system	–	B(r)	**ERR**or flag indicating fatal errors.	–
17	NO_AI	system	0	–	**N**umber **O**f **AI** event channels referenced.	Updated by the system.
16	NO_DI	system	0	–	**N**umber **O**f **DI** event channels referenced.	Updated by the system.

Event references



Terminal Description, Event references

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
30(1)	REF1	user	–	–	**REF**erence **1** is used to fill in reference to the event channel. Reference can be made to DIEV and AIEV channels.	–
30(2)	REF2	user	–	–	**REF**erence **2** is used to fill in reference to the event channel. Reference can be made to DIEV and AIEV channels.	
:	:	:	:	:	:	
30(32)	REF32	user	–	–	**REF**erence **32** is used to fill in reference to the event channel. Reference can be made to DIEV and AIEV channels.	

Function

References to Event channel data base elements

The Event Set (Receive) contains references, terminals REF1 - REF32, to the AI Event and DI Event channel data base elements. Since the event channel elements is not created by the Event Set (Receive) data base element, the AI Event and DI Event data base elements must be created before the Event Set (Receive) data base element.

It is important to configure the reference terminals corresponding to the Event Set (Send) data base element containing the source events. This means if REF1 in the Event Set (Send) element contain a reference to an analog type of event generating channel (for example AI Calculated), the REF1 terminal in Event Set (Receive) must contain a reference to an AI Event data base element. Digital event channels shall be configured accordingly. All references must be unique, that is included in just one Event set (Receive).

The NO_AI and NO_DI terminals indicates the number analog and digital event channels being referenced on the REFx terminals. The NO_AI and NO_DI terminals are updated automatically by the system to ease for a fast verification of having the same number and types of event channels in the receiving and the source event set. Verification of that each individual terminal contains the same type of reference have to be done by comparing reference by reference in the source and the receiving event set data base element.

Activation of the Event Set

The ACT terminal specifies if the Event Set shall be active (=1) or inactive (=0).

Specification of event source

The S_USER, S_BUS, S_STN and S_IDENT specifies a unique source for the events sets to be received by the EVS(R). The terminals can not be changed when the event set is activated in a system in operational mode. The event set must in this case be deactivated first (ACT=0).

S_USER specifies the used communication type Advant Fieldbus 100 or RCOM.

S_BUS specifies the bus number on Advant Fieldbus 100 or net number on RCOM.

S_STN specifies the station number on Advant Fieldbus 100 or node number on RCOM.

S_IDENT specifies the unique IDENT number in the source station/node.

Error Handling

The ERR terminal indicates fatal errors, meaning that the Event Set is not running as specified. The error is typically caused by bad parameter values on the S_USER, S_BUS, S_STATION and S_IDENT terminals. These errors is typically corrected by deactivating the event set (ACT = 0), correcting the configuration of the terminals, and finally activating the event set (ACT=1).

The WARNING terminal indicates non-fatal errors, meaning that the event set has detected an error but continues to run. The non-fatal errors can be that the source event set do not answer (not running), a communication error has occurred on the used communication media. These type of non-fatal errors will disappear when the source event set is running again or when the communication is running again. It can also indicate that something is not okay with the referenced Event channels, such as one or more AIEV or DIEV channels are removed from the data base, or are inactive (ACT=0), or a reference is not to AIEV or DIEV.

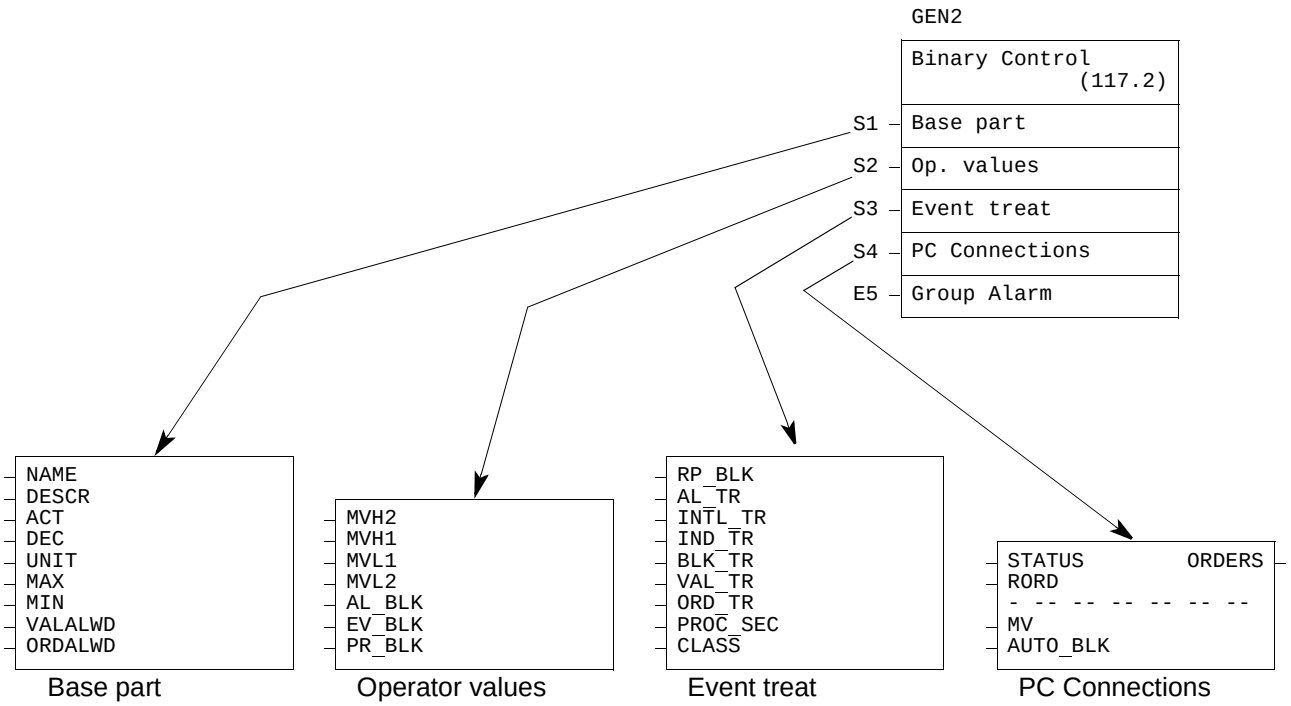
Binary Control GENBIN

Summary

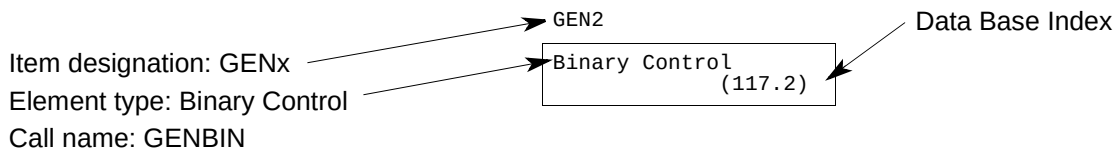
The Binary Control data base element is used to build up Advant Station 500 Series Operator Station functions for the GENBIN functional unit. Some static information in the displays are given. Parameters which can be changed from dialog can be given start values. The element performs an interface between the PC-program/process function and Advant Station 500 Series Operator Station.

For further information, please refer to the description of the functional unit GENBIN. For information about the extension parts of Group Alarm see data base element Group Member.

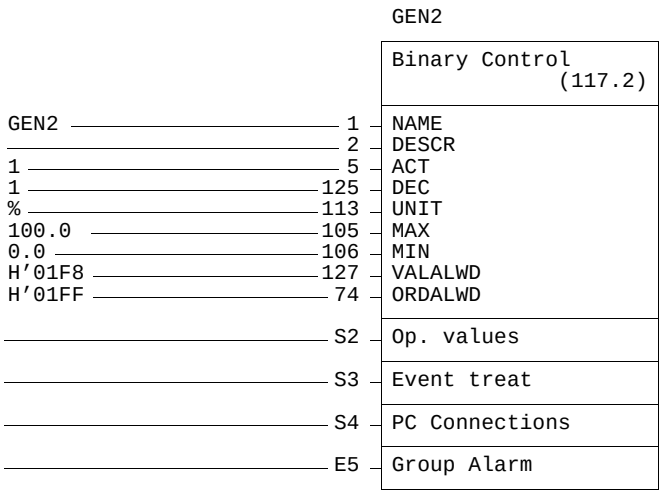
Overview



Head



Base part



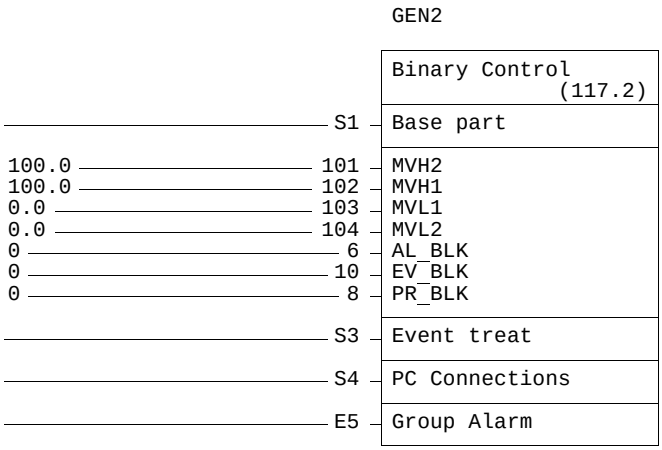
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	GENx	–	Every Binary Control must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
2	DESCR	user	–	–	**DESCR**iption of Binary Control shown in Operator Station.	Max. 20 characters. Any information regarding Binary Control may be entered.
5	ACT	user	1	B(r)	1=operator communication is **ACT**ive.	0=dialog is blocked and events are not updated.
125	DEC	user	1	–	Number of **DEC**imals to be used for alarm limits, range limits (range max and range min), setpoint and autoset point.	A maximum of 5 digits, plus sign and decimal point may be displayed. 0..4 decimals.
113	UNIT	user	%	A6(r)	The **UNIT** of the measured value in engineering unit.	Maximum 6 characters shown in Operator Station and data base element.
105	MAX	user	100.0	R(r/w)	**MAX**imum value within measuring range.	Used for scaling of bar graph.
106	MIN	user	0.0	R(r/w)	**MIN**imum value within measuring range.	Used for scaling of bar graph.

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
127	VALALWD	user	H'01F8	I(r/w)	**VAL**ue **AL**lo**W**e**D**. Group of data consisting of the values which are changeable from the dialog. Each available value is represented by a flag in VALALWD. If it is allowed to change a value from the dialog its corresponding flag is set to 1. The default value gives the possibility to change all values that are available from the dialog. How VALALWD is calculated is shown in the table to the right.	Value	Bit value	Def. Hex. value
						MVH2	8	8
						MVH1	1	F
						MVL1	2	
						MVL2	4	
						MAX	8	
						MIN	1	1
74	ORDALWD	user	H'01FF	I(r/w)	**ORD**er **AL**lo**W**e**D**. Group of data consisting of the manual orders which are allowed to give from the dialog. Each available order is represented by a flag in ORDALWD. If it is allowed to give an order from the dialog, its corresponding flag is set to 1. The default value gives the possibility to give all orders that are available from the dialog. How ORDALWD is calculated is shown in the table to the right.	Manual order	Bit value	Def. Hex. value
						ORDCEN	1	F
						ORDLOC	2	
						ORDREM	4	
						ORDMAN	8	
						ORDAUTO	1	F
						ORDBLK	1	
						ORDSTBY	4	
						ORDONOP	8	
						ORDOFCL	1	1

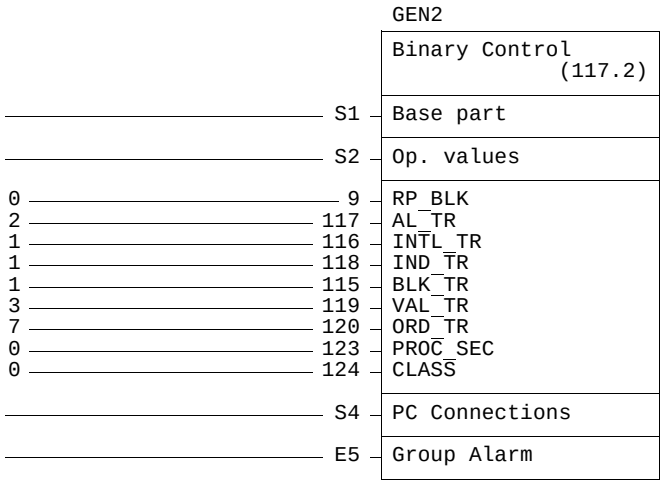
Operators values



Terminal Description, Operators values

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
101	MVH2	dialog	100.0	R(r/w)	Alarm limit **H2** of **M**easured **V**alue.	–
102	MVH1	dialog	100.0	R(r/w)	Alarm limit **H1** of **M**easured **V**alue.	–
103	MVL1	dialog	0.0	R(r/w)	Alarm limit **L1** of **M**easured **V**alue.	–
104	MVL2	dialog	0.0	R(r/w)	Alarm limit **L2** of **M**easured **V**alue.	–
6	AL_BLK	dialog	0	B(r/w)	**BL**oc**K AL**arms and interlocks.	–
10	EV_BLK	dialog	0	B(r/w)	**BL**oc**K EV**ents.	–
8	PR_BLK	dialog	0	B(r/w)	**BL**oc**K PR**inter.	–

Event treat



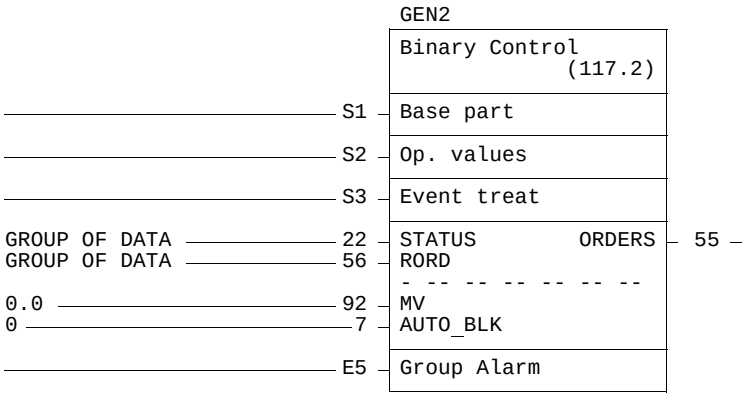
Terminal Description, Event treat

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
9	RP_BLK	user	0	B(r/w)	**BL**oc**K R**e**P**eated alarms.	–
117	AL_TR	user	2	–	**AL**arm **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of alarms.	–
116	INTL_TR	user	1	–	**INT**er**L**ock **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of interlocks**.**	–
118	IND_TR	user	1	–	**IND**ication **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of indications.	–
115	BLK_TR	user	1	–	**BL**oc**K TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of blocking.	The function is not yet implemented in Operator Station.
119	VAL_TR	user	3	–	**VAL**ue **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of numerical values from dialog.	The function is not yet implemented in Operator Station.
120	ORD_TR	user	7	–	**ORD**er **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of manual orders**.**	The function is not yet implemented in Operator Station.

Terminal Description, Event treat (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
123	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
124	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–

PC Connections



Terminal Description, PC Connections

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
22	STATUS	PC	–	IL(r/w)	Group of data to be connected to the PC element, GENBIN-I, connection **STATUS**.	–
55	ORDERS	dialog	–	IL(r/w)	Group of data to be connected to the PC element, GENBIN-O, connection **ORDERS**.	–
56	RORD	PC	–	I(r/w)	Group of data to be connected to the PC element, GENBIN-O, connection **RORD**.	–
92	MV	PC	0.0	R(r/w)	**M**easured **V**alue.	–
7	AUTO_BLK	PC	0	B(r/w)	**AUTO BL**oc**K** alarms and interlocks.	–

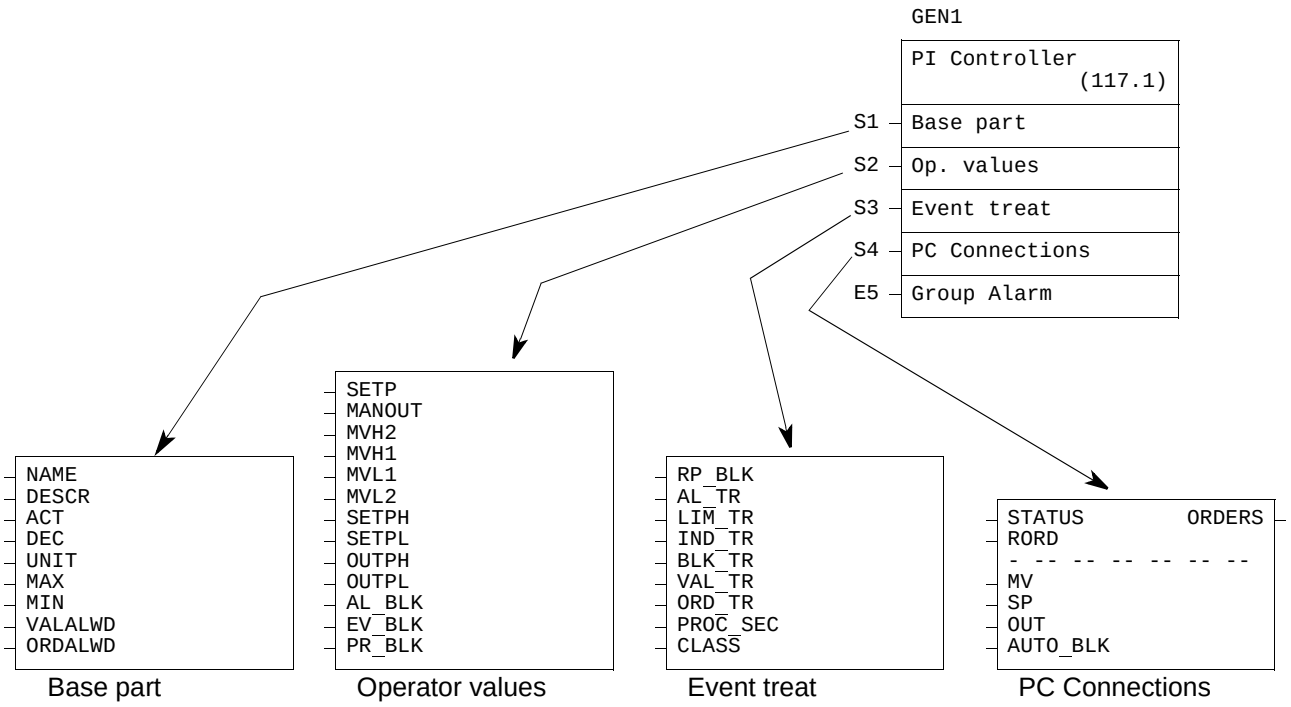
PI Controller GENCON

Summary

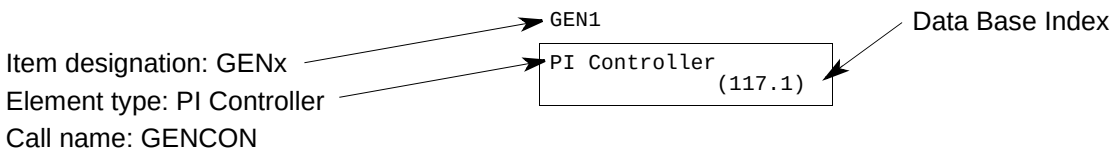
The PI Controller data base element is used to build up Advant Station 500 Series Operator Station functions for the GENCON functional unit. Some static information in the displays are given. Parameters which can be changed from dialog can be given start values. The element performs an interface between the PC-program/process function and Advant Station 500 Series Operator Station.

For further information, please refer to the description of the functional unit GENCON. For information about the extension parts of Group Alarm see data base element Group Member.

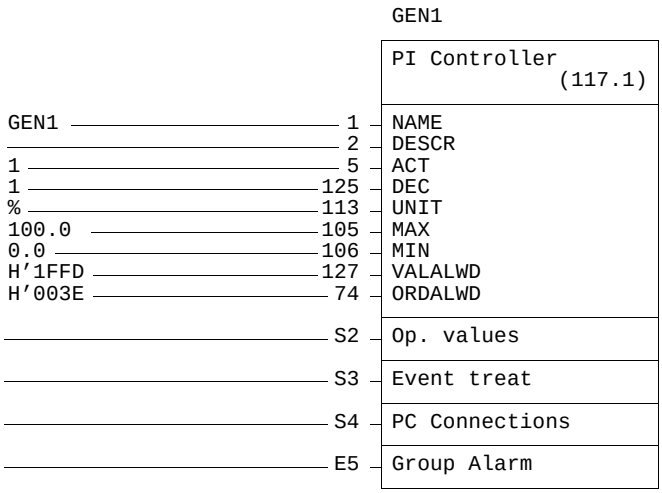
Overview



Head



Base part



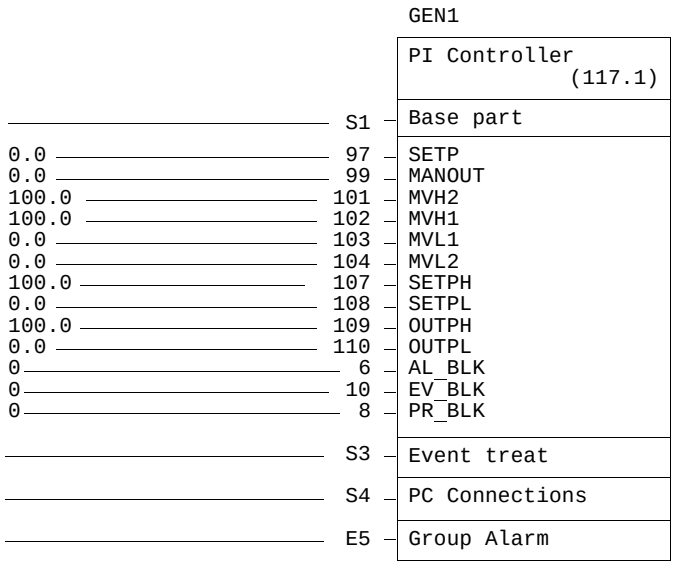
Terminal Description, Base part

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	user	GENx	–	Every Controller must have a unique **NAME**. For example LICA 107.	Max. 20 characters. Spaces are not allowed.
2	DESCR	user	–	–	This **DESCR**iption of the Controller will be shown in Operator Station.	Max. 20 characters. You may enter any information regarding the controller.
5	ACT	user	1	B(r)	1=operator communication is **ACT**ive.	0=dialog is blocked and events are not updated.
125	DEC	user	1	–	The number of **DEC**imals for measured value and its alarm limits and for setpoint and autosetpoint and range min and range max.	A total number of 5 figures plus point and sign can be presented. 0 - 4 decimals.
113	UNIT	user	%	A6(r)	The **UNIT** of the measured value and setpoint in engineering unit.	Maximum 6 characters shown in Operator Station and data base element.
105	MAX	user	100.0	R(r/w)	**MAX**imum value within measuring range.	Used for scaling of bar graph.
106	MIN	user	0.0	R(r/w)	**MIN**imum value within measuring range.	Used for scaling of bar graph.

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
127	VALALWD	user	H'1FFD	I(r/w)	**VAL**ue **AL**lo**W**e**D**. Group of data consisting of the values which are changeable from the dialog. Each available value is represented by a flag in VALALWD. If it is allowed to change a value from the dialog its corresponding flag is set to 1. The default value gives the possibility to change all values that are available from the dialog. How VALALWD is calculated is shown in the table to the right.	Value	Bit value	Def. Hex. value
						SETP	1	D
						MANOUT	4	
						MVH2	8	
						MVH1	1	F
						MVL1	2	
						MVL2	4	
						MAX	8	
						MIN	1	F
						SETPH	2	
						SETPL	4	
						OUTPH	8	
						OUTPL	1	1
74	ORDALWD	user	H'003E	I(r/w)	**ORD**er **AL**lo**W**e**D**. Group of data consisting of the manual orders which are allowed to give from the dialog. Each available order is represented by a flag in ORDALWD. If it is allowed to give an order from the dialog, its corresponding flag is set to 1. The default value gives the possibility to give all orders that are available from the dialog. How ORDALWD is calculated is shown in the table to the right.	Manual order	Bit value	Def. Hex. value
						ORDMANF	2	E
						ORDMAN	4	
						ORDAUTO	8	
						ORDE1	1	3
						ORDE2	2	

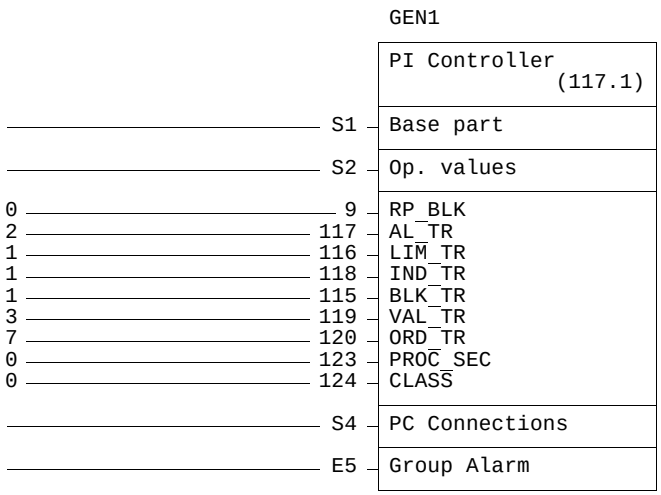
Operators values



Terminal Description, Operators values

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
97	SETP	dialog	0.0	R(r/w)	Auto **SETP**oint.	–
99	MANOUT	dialog	0.0	R(r/w)	**MAN**ual **OUT**put.	–
101	MVH2	dialog	100.0	R(r/w)	Alarm limit **H2** of **M**easured **V**alue.	–
102	MVH1	dialog	100.0	R(r/w)	Alarm limit **H1** of **M**easured **V**alue.	–
103	MVL1	dialog	0.0	R(r/w)	Alarm limit **L1** of **M**easured **V**alue.	–
104	MVL2	dialog	0.0	R(r/w)	Alarm limit **L2** of **M**easured **V**alue.	–
107	SETPH	dialog	100.0	R(r/w)	**H**igh limit of auto **SETP**oint.	–
108	SETPL	dialog	0.0	R(r/w)	**L**ow limit of auto **SETP**oint.	–
109	OUTPH	dialog	100.0	R(r/w)	**OUTP**ut **H**igh limit (%).	–
110	OUTPL	dialog	0.0	R(r/w)	**OUTP**ut **L**ow limit (%).	–
6	AL_BLK	dialog	0	B(r/w)	**BL**oc**K AL**arms and interlocks.	–
10	EV_BLK	dialog	0	B(r/w)	**BL**oc**K EV**ents.	–
8	PR_BLK	dialog	0	B(r/w)	**BL**oc**K PR**inter.	–

Event treat



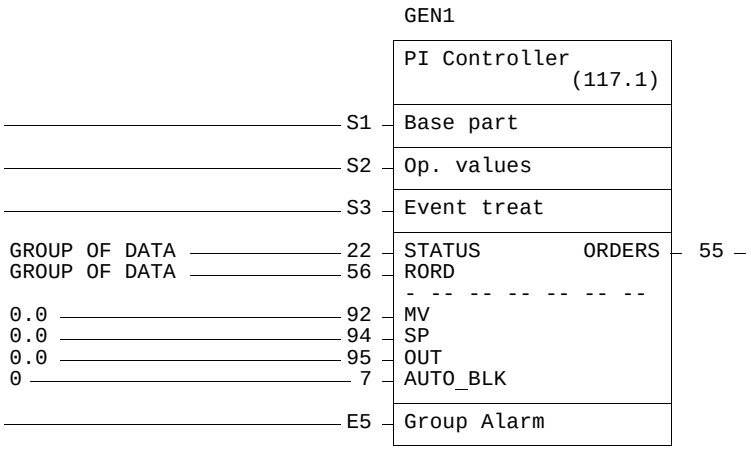
Terminal Description, Event treat

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
9	RP_BLK	user	0	B(r/w)	**BL**oc**K** **R**e**P**eated alarms.	–
117	AL_TR	user	2	–	**AL**arm **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of ALarms.	–
116	LIM_TR	user	1	–	**LIM**itation **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of limitations.	–
118	IND_TR	user	1	–	**IND**ication **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of indications.	–
115	BLK_TR	user	1	–	**BL**oc**K** **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of blocking.	The function is not yet implemented in Operator Station.
119	VAL_TR	user	3	–	**VAL**ue **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of numerical values from dialog.	The function is not yet implemented in Operator Station.

Terminal Description, Event treat (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
120	ORD_TR	user	7	–	**ORD**er **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of manual orders.	The function is not yet implemented in Operator Station.
123	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1 to 16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
124	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–

PC Connections



Terminal Description, PC Connections

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
22	STATUS	PC	–	IL(r/w)	Group of data to be connected to the PC element, GENBIN-I, connection **STATUS**.	–
55	ORDERS	dialog	–	IL(r/w)	Group of data to be connected to the PC element, GENBIN-O, connection **ORDERS**.	–
56	RORD	PC	–	I(r/w)	Group of data to be connected to the PC element, GENBIN-O, connection **RORD**.	–
92	MV	PC	0.0	R(r/w)	**M**easured **V**alue.	–
94	SP	PC	0.0	R(r/w)	Working **S**et**P**oint.	–
95	OUT	PC	0.0	R(r/w)	**OUT**put.	–
7	AUTO_BLK	PC	0	B(r/w)	**AUTO BL**oc**K** alarms and interlocks.	–

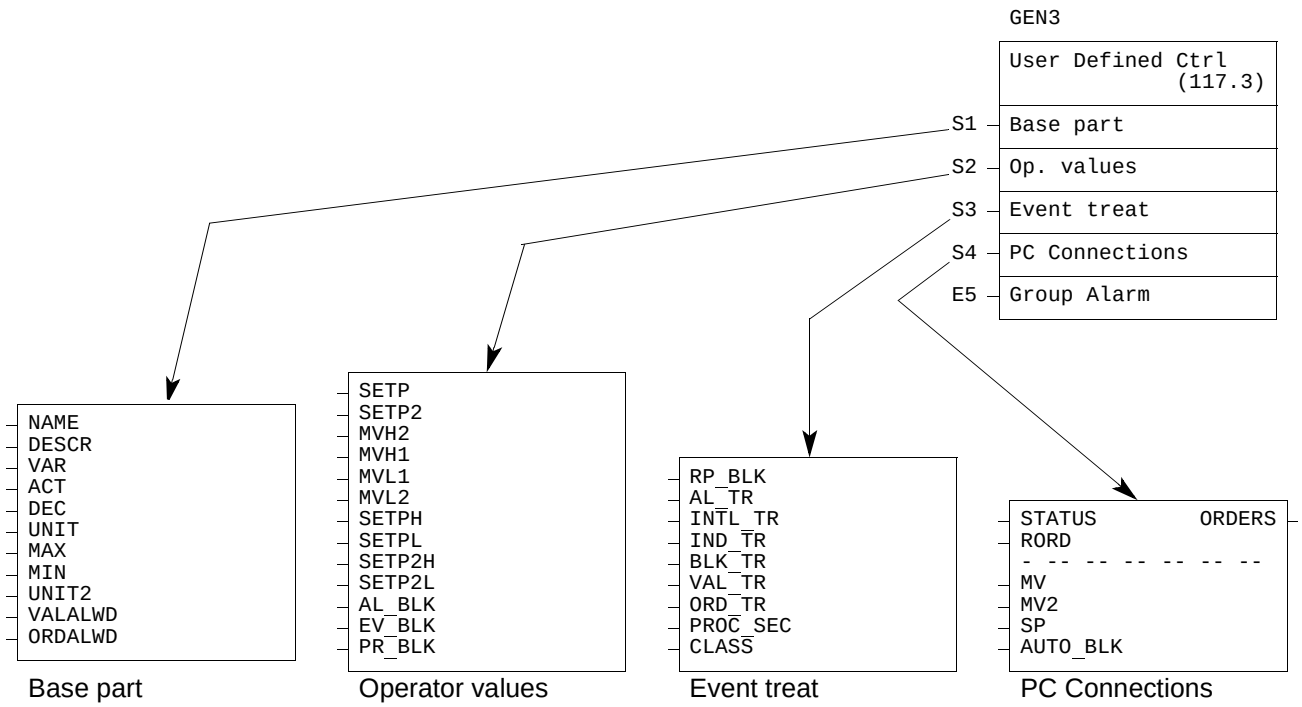
User Defined Ctrl GENUSD

Summary

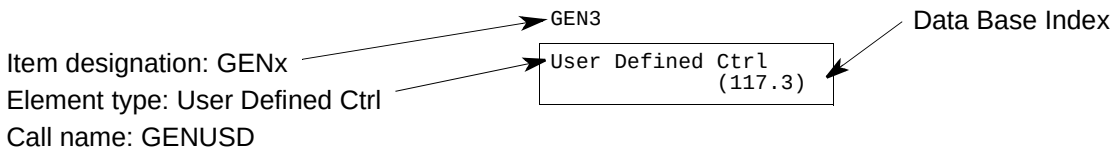
The User Defined Ctrl data base element is used to build up Advant Station 500 Series Operator Station functions for the GENUSD functional unit. Some static information in the displays are given. Parameters which can be changed from dialog can be given start values. The element performs an interface between the PC-program/process function and Advant Station 500 Series Operator Station.

For further information, please refer to the description of the functional unit GENUSD. For information about the extension parts of Group Alarm see data base element Group Member.

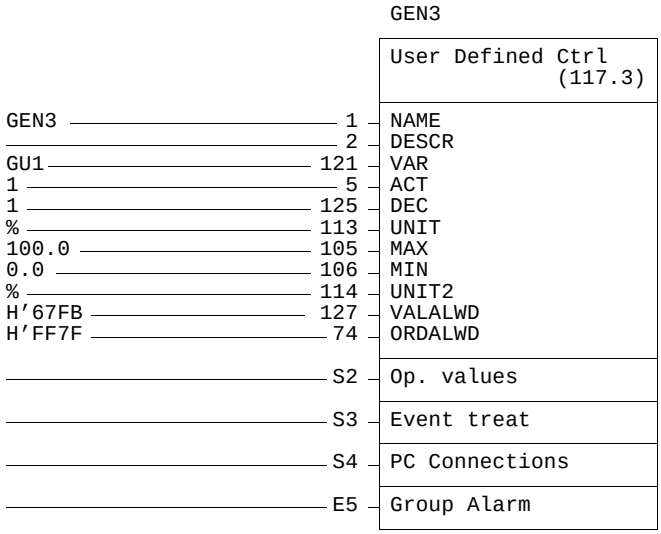
Overview



Head



Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	GENx	–	Every Controller must have a unique **NAME**. For example M353.13.	Max. 20 characters. Spaces are not allowed.
2	DESCR	user	–	–	This **DESCR**iption of the Controller will be shown in Operator Station.	Max. 20 characters. You may enter any information regarding the controller.
121	VAR	user	GU1	–	**VAR**iant: GU1, …, GU6 are the variants of GENUSD which can be selected.	GU1, …, GU6 has the same default dialogs and displays in Operator Station. The user can modify them if needed. For further information, please refer to Advant Station 500 Series Operator Station manuals.
5	ACT	user	1	B(r)	1=the operator communication is **ACT**ive.	0=dialog is blocked and events are not updated.
125	DEC	user	1	–	The number of **DEC**imals for measured value and its alarm limits and for setpoint and RAMNGEMIN and RANGEMAX.	A total number of 5 figures plus point and sign can be presented. DEC can be 0 - 4.

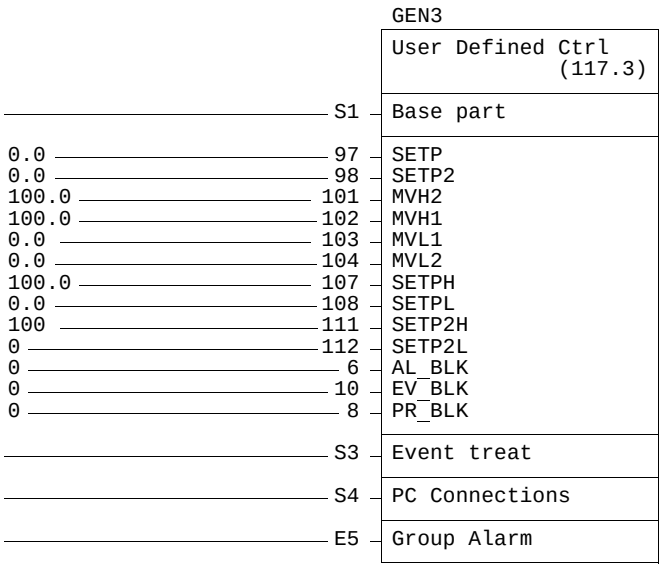
Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
113	UNIT	user	%	A6(r)	The **UNIT** of the measured value and setpoint in engineering unit.	Max. 6 characters shown in Operator Station and data base element.		
105	MAX	user	100.0	R(r/w)	**MAX**imum value within measuring range.	Used for scaling of bar graph.		
106	MIN	user	0.0	R(r/w)	**MIN**imum value within measuring range.	Used for scaling of bar graph.		
114	UNIT2	user	%	A6(r)	The **UNIT** of the measured value **2** and setpoint 2 in engineering unit.	Max. 6 characters shown in Operator Station and data base element.		
127	VALALWD	user	H'67FB	I(r/w)	**VAL**ue **AL**lo**W**e**D**. Group of data consisting of the values which are changeable from the dialog. Each available value is represented by a flag in VALALWD. If it is allowed to change a value from the dialog its corresponding flag is set to 1. The default value gives the possibility to change all values that are available from the dialog. How VALALWD is calculated is shown in the table to the right.	Value	Bit value	Def. Hex. value
						SETP	1	B
						SETP2	2	
						MVH2	8	
						MVH1	1	F
						MVL1	2	
						MVL2	4	
						MAX	8	
						MIN	1	7
						SETPH	2	
						SETPL	4	F
						SETP2H	2	6
						SETP2L	4	

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
74	ORDALWD	user	H'FF7F	I(r/w)	**ORD**er **AL**lo**W**e**D**. Group of data consisting of the manual orders which are allowed to give from the dialog. Each available order is represented by a flag in ORDALWD. If it is allowed to give an order from the dialog, its corresponding flag is set to 1. The default value gives the possibility to give all orders that are available from the dialog. How ORDALWD is calculated is shown in the table to the right.	Manual order	Bit value	Def. Hex. value
						ORDM1	1	F
						ORDM2	2	
						ORDM3	4	
						ORDMAN	8	
						ORDAUTO	1	7
						ORDBLK	2	
						ORDSTBY	4	
						ORDC1	1	F
						ORDC2	2	
						ORDC3	4	
						ORDC4	8	
						ORDC5	1	F
						ORDC6	2	
						ORDC7	4	
						ORDC8	8	

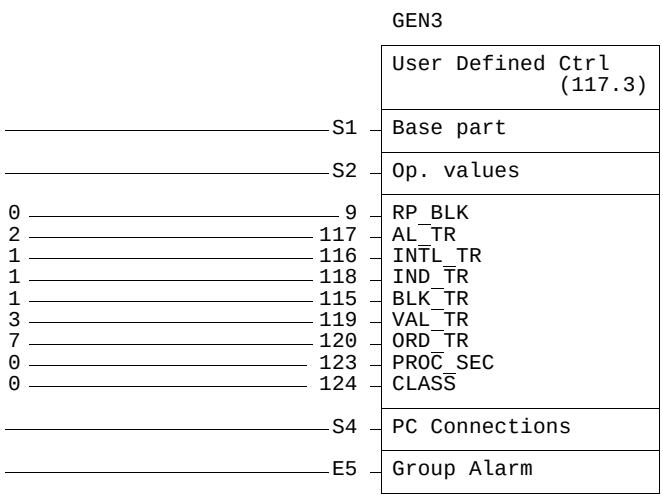
Operators values



Terminal Description, Operators values

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
97	SETP	dialog	0.0	R(r/w)	Auto **SETP**oint.	–
98	SETP2	dialog	0.0	IL(r/w)	**SETP**oint integer long.	–
101	MVH2	dialog	100.0	R(r/w)	Alarm limit **H2** of **M**easured **V**alue.	–
102	MVH1	dialog	100.0	R(r/w)	Alarm limit **H1** of **M**easured **V**alue.	–
103	MVL1	dialog	0.0	R(r/w)	Alarm limit **L1** of **M**easured **V**alue.	–
104	MVL2	dialog	0.0	R(r/w)	Alarm limit **L2** of **M**easured **V**alue.	–
107	SETPH	dialog	100.0	R(r/w)	**H**igh limit of auto **SETP**oint.	–
108	SETPL	dialog	0.0	R(r/w)	**L**ow limit of auto **SETP**oint.	–
111	SETP2H	dialog	100	IL(r/w)	**H**igh limit of auto **SETP**oint **2**.	–
112	SETP2L	dialog	0	IL(r/w)	**L**ow limit of auto **SETP**oint **2**.	–
6	AL_BLK	dialog	0	B(r)	**BL**oc**K AL**arms and limitations.	–
10	EV_BLK	dialog	0	B(r/w)	**BL**oc**K EV**ents.	–
8	PR_BLK	dialog	0	B(r/w)	**BL**oc**K PR**inter.	–

Event treat



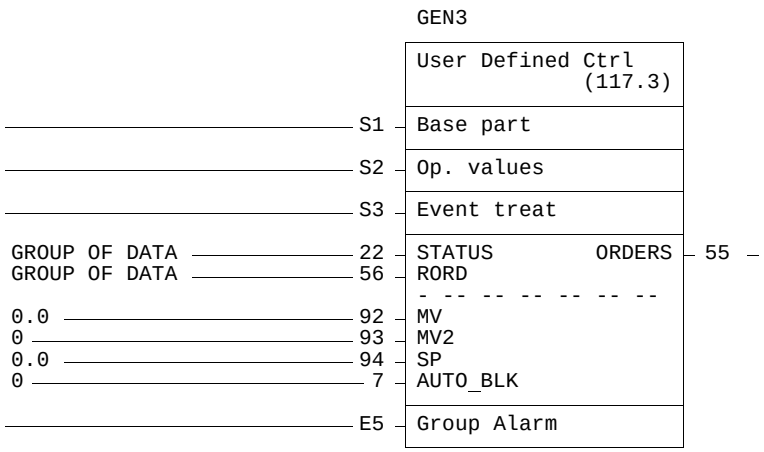
Terminal Description, Event treat

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
9	RP_BLK	user	0	B(r/w)	**BL**oc**K** **R**e**P**eated alarms.	–
117	AL_TR	user	2	–	**AL**arm **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of ALarms.	–
116	INTL_TR	user	1	–	**INT**er**L**ock **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of interlocks**.**	–
118	IND_TR	user	1	–	**IND**ication **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of indications.	–
115	BLK_TR	user	1	–	**BL**oc**K** **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of blocking.	The function is not yet implemented in Operator Station.
119	VAL_TR	user	3	–	**VAL**ue **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of numerical values from dialog.	The function is not yet implemented in Operator Station.

Terminal Description, Event treat (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
120	ORD_TR	user	7	–	**ORD**er **TR**eat. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of manual orders.	The function is not yet implemented in Operator Station.
123	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1 to 16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
124	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–

PC Connections



Terminal Description, PC Connections

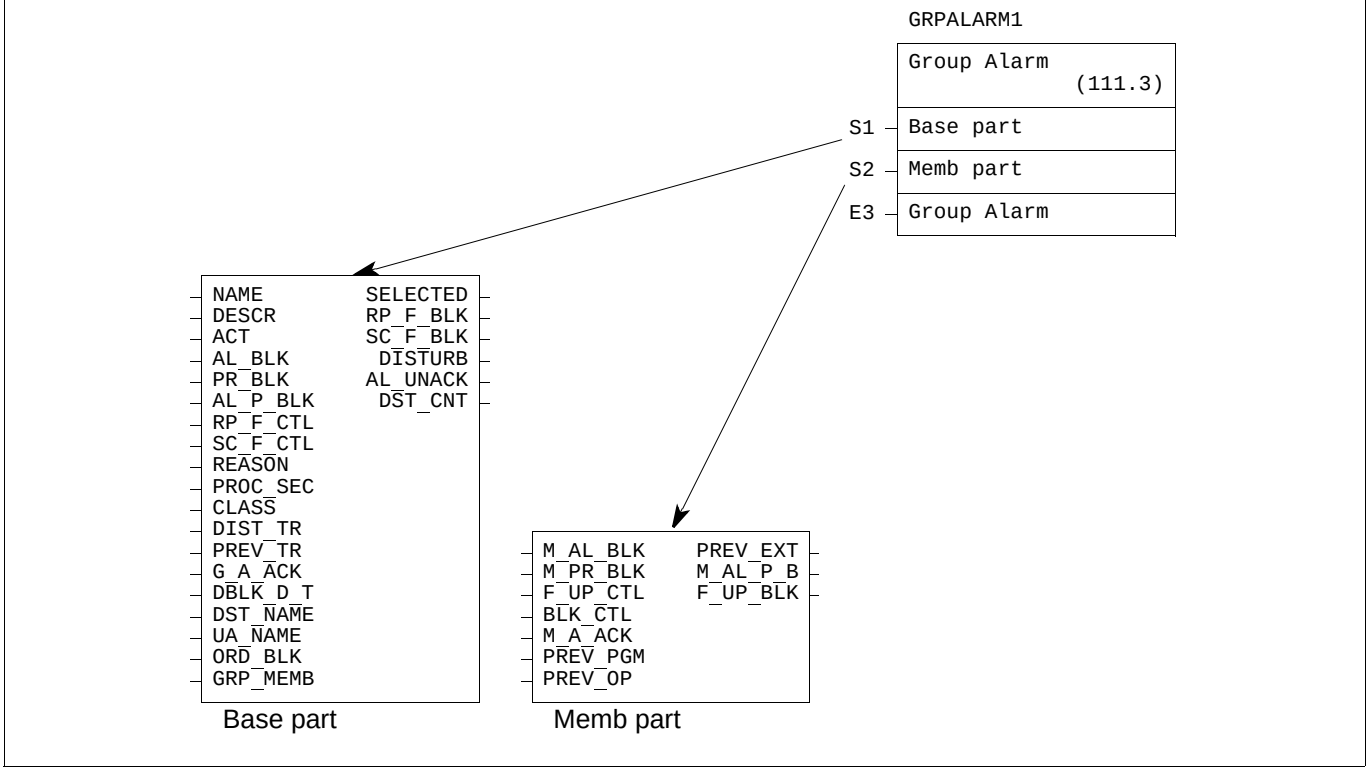
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
22	STATUS	PC	–	IL(r/w)	**STATUS**. Group of data to be connected to the PC element. GENUSD-I, connection **STATUS**.	–
56	RORD	PC	–	I(r/w)	**RORD**. Group of data to be connected to the PC element, GENUSD-O, connection **RORD**.	–
92	MV	PC	0.0	R(r/w)	**M**easured **V**alue.	–
93	MV2	PC	0	IL(r/w)	**M**easured **V**alue **2**.	–
94	SP	PC	0.0	R(r/w)	Working **S**et**P**oint.	–
7	AUTO_BLK	PC	0	B(r/w)	**AUTO BL**oc**K** alarms and interlocks.	–
55	ORDERS	dialog	–	IL(r/w)	**ORDERS**. Group of data to be connected to the PC element. GENUSD-O, connection **ORDERS**.	–

Group Alarm GRPALARM

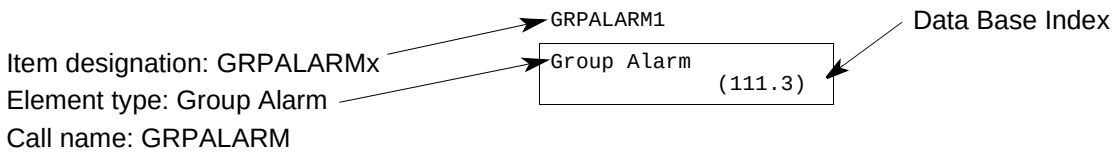
Summary

The Group Alarm data base element is used to configure the GROUP-ALARM function in the Advant Station 500 Series Operator Station or the Advant Controller 400 Series. For information about the extension part of Group Alarm see data base element Group Member. For further information, please refer to the manual *Advant Station 500 Series Basic Functions*.

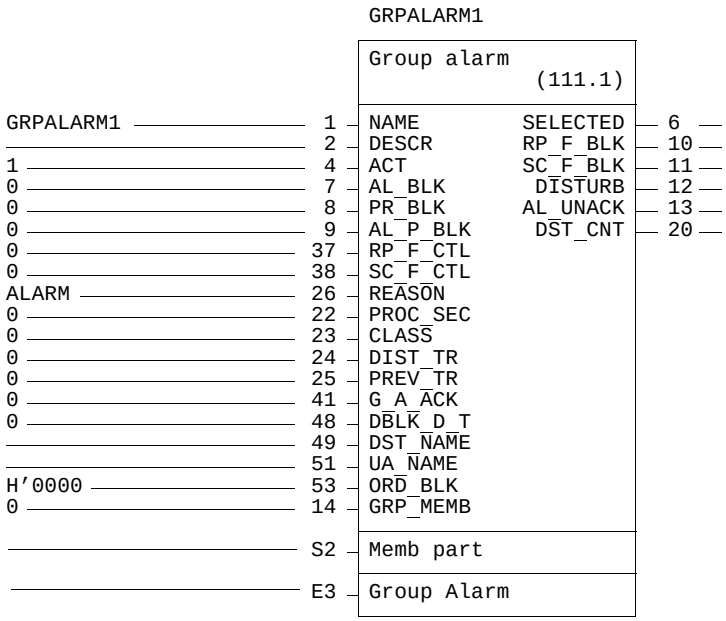
Overview



Head



Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	GRP ALARMx	–	Each Group Alarm must have a unique **NAME**.	Max. 20 characters. Spaces not allowed.
2	DESCR	user/ dialog	–	–	This **DESCR**iption of the alarm group will be used in pictures and lists in Operator Station.	Any information regarding the alarm group may be entered. Max. 20 characters.
4	ACT	user	1	–	1=The alarm group is **ACT**ive. 0=The alarm group is spare.	Modification is only allowed in configuration mode or when no signals/objects are connected to the group.
7	AL_BLK	dialog	0	–	Flag for **BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
8	PR_BLK	dialog	0	–	Flag for **BL**oc**K**ing of **PR**intout in Operator Station.	–
9	AL_P_BLK	PC/ system	0	B(r)	**AL**arm **P**eriod **BL**oc**K** flag for temporary blocking of alarm indication and event handling in Operator Station.	–

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
37	RP_F_CTL	user/ dialog	0	–	**R**e**P**eat **F**ail **C**on**T**ro**L**. Request for reduced number of reports of repetitive alarms.	–
38	SC_F_CTL	user/ dialog	0	–	**S**e**C**ond **F**ail **C**on**T**ro**L**. Request for blocking the alarm and event handling due to a second fail.	–
26	REASON	user/ dialog	ALARM	–	Defines which type of event the alarm group shall handle.	ALARM=The alarm group is affected when a signal connected to the group enters a state of alarm. This type of alarm group is called Alarm-Triggered Group. UNACK=The alarm group is affected when a signal connected to the group is unacknowledged. This type of alarm group is called Unack-Triggered Group.
22	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The object may be presented in lists. -1=the object cannot be selected and cannot be presented in lists.
23	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
24	DIST_TR	user	0	–	**DIST**urbance **TR**eatment. Pointer to the data base element in EVENT_TREAT which defines the event handling for alarm and events.	Recommended settings: 0=No event reporting 1=Event reporting 2=Event reporting including alarm handling
25	PREV_TR	user	0	–	**PREV**ent **TR**eatment. Pointer to the data base element in EVENT_TREAT which defines the event handling for blocking.	Recommended settings: 0=No event reporting 1=Event reporting 2=Event reporting including alarm handling
41	G_A_ACK	user/ dialog	0	–	**G**roup **A**uto **ACK**nowledge. The group alarm is automatically acknowledged: – For Alarm-Triggered Group: when all members in the group have changed status to normal. – For Unack-Triggered Group: when all members in the group have changed status to acknowledged.	–

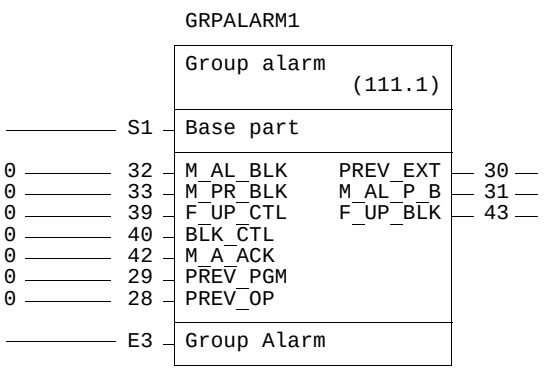
Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
48	DBLK_D_T	user/ dialog	0	–	**D**e**BL**oc**K** **D**elay **T**ime. Delay time in seconds. Used when a deblocking of the event handling is activated by PC-program or a signal defined as a blocking activator.	–		
49	DST_NAME	user/ dialog	–	–	**D**i**ST**urbance **NAME**. Name of the DO signal that mirror's the status of DISTURB (Disturbance).	In Advant Controller 400 Series system the DO signal must be located in own node.		
51	UA_NAME	user/ dialog	–	–	**U**n**A**cknowledged **NAME**. Name of the DO signal that mirror's the status of AL_UNACK (Alarm unacknowledged).	In Advant Controller 400 Series system the DO signal must be located in own node.		
53	ORD_BLK	user	H'0000	–	**BL**oc**K**ing of manual **ORD**ers. All available orders are represented by a flag in ORD_BLK. A set flag indicates a blocked order. The default value contains no set flags. The ORD_BLK table shows how to compute the ORD_BLK value. New value can be entered as a hexadecimal string e.g H'0040 or as a binary string, e.g B0000 0000 0100 0000, for blocking of order M_PR_BLK.	Order	Bit value	Def. Hex. value
						REASON	1	0
						AL_BLK	2	
						PR_BLK	4	
						BLK_CTL	8	
						PREV_OP	1	0
						M_AL_BLK	2	
						M_PR_BLK	4	
						RP_F_CTL	8	
						SC_F_CTL	1	0
						F_UP_CTL	2	
						G_A_ACK	4	
						M_A_ACK	8	
						DBLK_D_T	1	0
						DST_NAME	2	
						UA_NAME	4	
14	GRP_MEMB	system	0	B(r)	Flag indicating that the alarm group is a member of another superior group, located in the same node.	–		
6	SELECTED	system	–	–	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–		

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
10	RP_F_BLK	system	–	–	**R**e**P**eat **F**ail **BL**oc**K**. Flag indicating that a repeating alarm is present in the element but that the indication has been blocked.	–
11	SC_F_BLK	system	–	–	**S**e**C**ond **F**ail **BL**oc**K**. Flag indicating that the event handling is blocked due to second fail.	–
12	DISTURB	system	–	–	**DISTURB**ance. Flag indicating whether a state of alarm exists in the alarm group.	–
13	AL_UNACK	system	–	–	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the alarm group.	–
20	DST_CNT	system	–	I(r)	**D**i**ST**urbance **C**ou**NT**er. Shows the number of: –Alarm-Triggered Group: active alarms in the alarm group. –Unack-Triggered Group: unacknowledged alarms in the alarm group.	–

Member part



Terminal Description, Member part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
32	M_AL_BLK	dialog	0	–	**M**ember **AL**arm **BL**oc**K**. Alarm and event handling are blocked for all members in the alarm group.	–
33	M_PR_BLK	dialog	0	–	**M**ember **PR**int **BL**oc**K**. Printouts in Operator Station are blocked for all members in the alarm group.	–
39	F_UP_CTL	user/ dialog	0	–	**F**irst **UP** **C**on**T**ro**L**. When active only the first alarm or event from any member in the alarm group will be indicated in the Operator Station.	1=Active 0=Not active
40	BLK_CTL	user/ dialog	0	–	**BL**oc**K** **C**on**T**ro**L**. When active all members in the alarm group will be blocked (using AL_P_BLK) when PREV_EXT or PREV_PGM is set.	1=Active 0=Not active
42	M_A_ACK	user/ dialog	0	–	**M**ember **A**uto **ACK**nowledge. When active all members in the alarm group will automatically be acknowledged when the alarm group is acknowledged.	1=Active 0=Not active
29	PREV_PGM	PC	0	B(r)	The processing of events from the members in the alarm group are temporary prevented by PC-program.	See also terminal BLK_CTL.
28	PREV_OP	dialog	0	–	Flag indicating that the processing of events from the members in the alarm group are prevented by the operator.	–

Terminal Description, Member part (Continued)

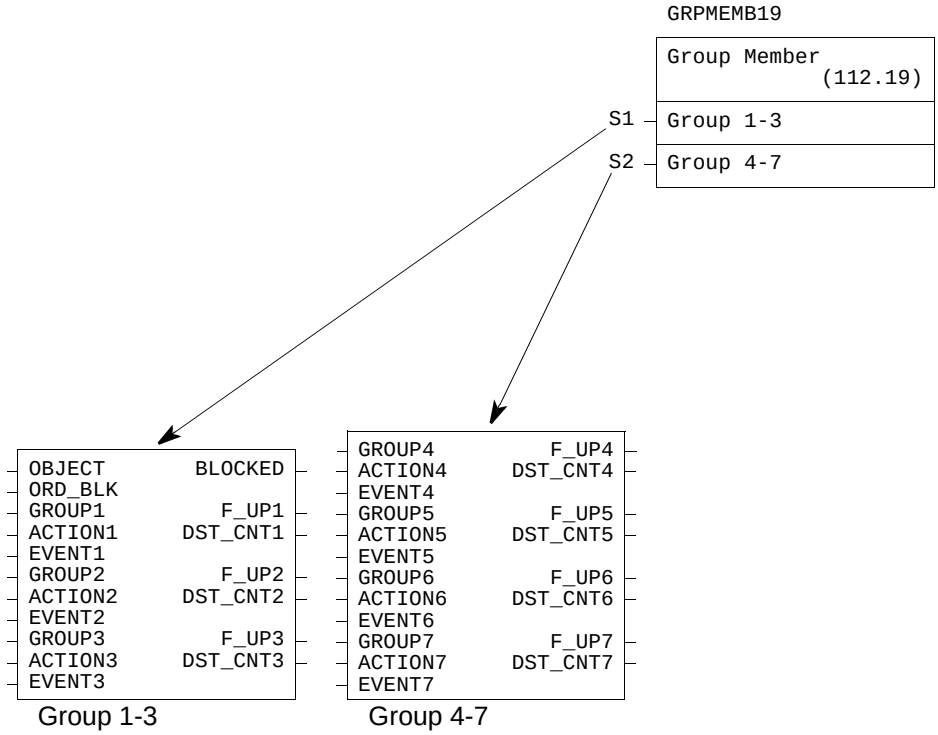
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
30	PREV_EXT	system	–	–	Flag indicating that the processing of events from the members in the alarm group are prevented by blocking master or due to FIRST_UP indication from any member in the alarm group.	See also terminal BLK_CTL.
31	M_AL_P_B	system	–	–	Flag indicating that the processing of events from the members is blocked due to the fact that BLK_CTL was active when PREV_PGM or PREV_EXT was set. The PREV_PGM or PREV_EXT which is set, indicates by whom.	–
43	F_UP_BLK	system	0	–	Flag indicating that the processing of events from the members is blocked on grounds of FIRST_UP.	–

Group Member GRPMEMB

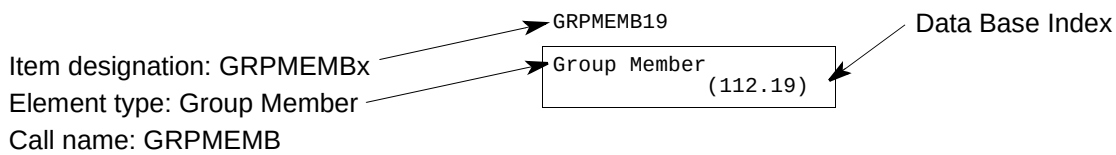
Summary

The Group Member data base element is used to define how the process signal/object will affect the GRPALARM element which the signal is connected to. To access the GRPMEMB element use the Group Alarm extension part of data base elements like AIS, DIS, PIDCON etc. It is not possible to access a GRPMEMB element without using the above mentioned group alarm extension part.

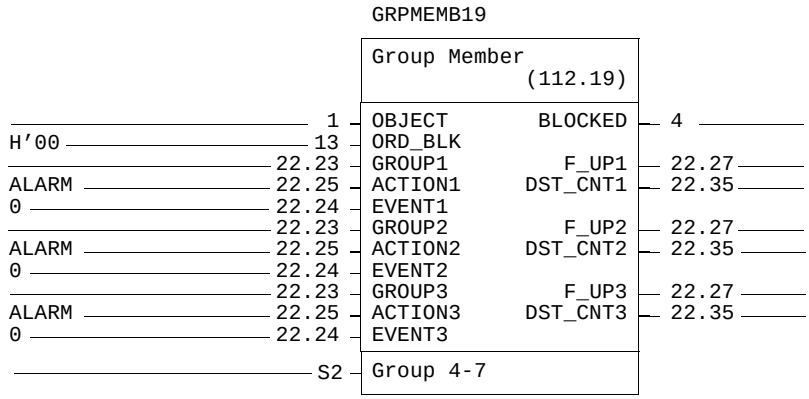
Overview



Head



Group 1-3



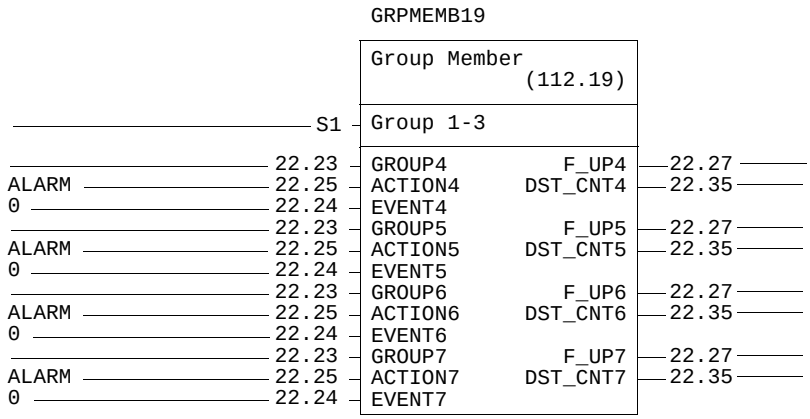
Terminal Description, Group 1-3

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks		
1	OBJECT	system	–	–	Name of the process signal/**OBJECT**.	–		
13	ORD_BLK	user	H'00	–	**BL**oc**K**ing of manual **ORD**ers. All available orders are represented by a flag in ORD_BLK. A set flag indicates a blocked order. The default value contains no set flag. The ORD_BLK table shows how to compute the ORD_BLK value. New value can be entered as a hexadecimal string, e.g., H'03 or as a binary string,e.g., B00000011.	Manual Order	Bit value	Def. Hex. value
						Action Event	1 2	0
22.23	GROUPx	user/ dialog	–	–	Name of the alarm **GROUP**, which the process signal/object is connected to.	x=1 - 7, that is a process signal/ object may be connected to seven alarm groups.		

Terminal Description, Group 1-3 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
22.25	ACTIONx	user/ dialog	ALARM	–	Specifies the treatment of the Alarm Group when the events specified by terminal REASON in the element GRPALARM occurs (x=1 - 7).	The following alternatives are available: ALARM: The flag DISTURBance in GRPALARM is affected. BLOCK: Defines a blocking master in the Alarm Group. ACK: defines an acknowledge master in the Alarm Group. NO ACTION: Used, e.g., for members which are members only for the purpose of utilizing the blocking or the acknowledge master function.
22.24	EVENTx	user/ dialog	0	–	Specifies the events to be processed by the Alarm Group. Event=0 means all events with an EVENT TREAT pointer equalling the value entered.	–
4	BLOCKED	system	–	–	**F**lag indicating whether the event handling of the members is **BLOCKED** either by Alarm block or Alarm period block.	–
22.27	F_UPx	system	–	–	**F**irst_**UP**. Flag indicating the member that has activated the auto blocking.	–
22.35	DST_CNTx	system	–	–	**D**i**ST**urbance **C**ou**NT**er. Counter for the number of alarms or unacknowledged alarms for the member.	–

Group 4-7



Terminal Description, Group 4-7

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
22.23	GROUPx	user/ dialog	–	–	Name of the alarm **GROUP**, which the process signal/object is connected to.	x=1 - 7, that is a process signal/ object may be connected to seven alarm groups.
22.25	ACTIONx	user/ dialog	ALARM	–	Specifies the treatment of the Alarm Group when the events specified by terminal REASON in the element GRPALARM occurs.	The following alternatives are available: ALARM: The flag DISTURBance in GRPALARM is affected. BLOCK: Defines a blocking master in the Alarm Group. ACK: defines an acknowledge master in the Alarm Group. NO ACTION: Used, e.g., for members which are members only for the purpose of utilizing the blocking or the acknowledge master function.
22.24	EVENTx	user/ dialog	0	–	Specifies the events to be processed by the Alarm Group. Event=0 means all events with an EVENT TREAT pointer equalling the value entered.	–

Terminal Description, Group 4-7 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
22.27	F_UPx	system	–	–	**F**irst_**UP**. Flag indicating the member that has activated the auto blocking.	–
22.35	DST_CNTx	system	–	–	**D**i**ST**urbance **C**ou**NT**er. Counter for the number of alarms or unacknowledged alarms for the member.	–

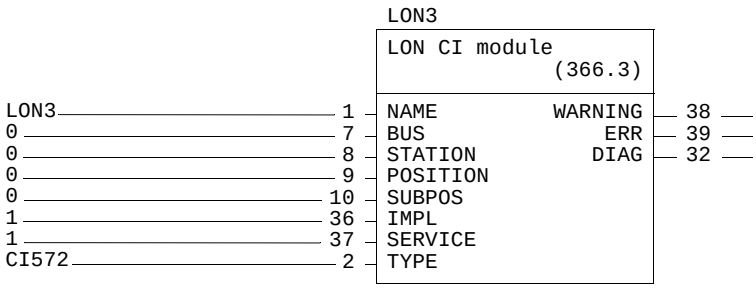
LONWORKS Network LON

Summary

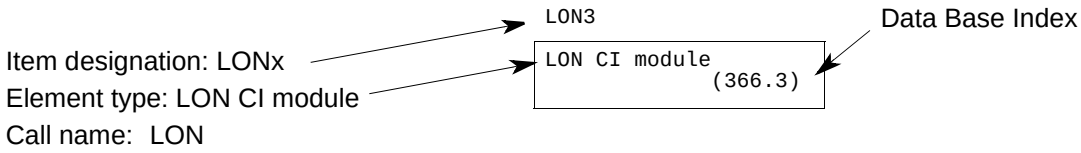
The LON data base element specifies a communication interface module that carries two channels for connection to LONWORKS. The element contains configuration data and diagnostic information.

- CI572: 2 channels with 1,25 MBit/s twisted pair connection to LONWORKS network.
- CI573: 2 channels with 78 KBit/s twisted pair connection to LONWORKS network.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default Value	PC connection data type	Description	Remarks
1	NAME	User	LONx	-	Unique **NAME** of element	Maximum 20 char.
7	BUS	Predef.	0	-	**BUS**. Part of Address	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
8	STATION	Predef.	0	-	**STATION**. Part of Address	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.

Termi-nal No	Terminal Name	Value entered by	Default Value	PC con-nection data type	Description	Remarks
9	POSITION	User	0	-	**POSITION**. Part of Address	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
10	SUBPOS	User	0	-	**SUBPOS**. Part of Address	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
36	IMPL	User	1	B(r)	0=the module is spare 1=the module is **IMPL**emented	
37	SERVICE	User	1	B(r/w)	The in-**SERVICE** terminal shows whether the module is in service (=1) or has been taken out of service (=0)	
2	TYPE	User	CI572	-	Module **TYPE** designation: CI572 (incl two 1,25 Mbit/s channels) or CI573 (incl two 78 Kbit/s channels)	
38	WARNING	System	-	B(r)	**WARNING** flag indicating non-fatal errors.	
39	ERR	System	-	B(r)	**ERR**or flag indicating hardware or configuration error.	
32	DIAG	System	-	-	**DIAG**nostic information	

Function

The LON data base element specifies a CI572 or CI573 communication module that carries two channels for connections to LONWORKS network in Advant Controller 400 Series. The data base element provides diagnostic information of both the channels and the CI572 or CI573 communication module itself.

The LON data base element can be created in the system but can not be removed. It is however possible to disable the function of the element by setting the IMPL terminal to 0. The data base element can also be reconfigured to specify a different CI572 or CI573 communication interface module, if one module is removed and another is inserted in the system.

Module Set-up Procedure

The communication module set-up procedure includes:

1. Implementation
2. Disabling
3. Parameters
4. Diagnostics.

1. Implementation

The LON data base communication module is configured through its parameters and started at system INIT if IMPL is set to 1. Setting IMPL to 1 in a running system means that the CI572 or CI573 communication module is configured with its parameters and started. Connection to the devices on LON is established. Setting IMPL to 0 in a system in operational mode means that the CI572 or CI573 communication module is shut down and the connection to the LONWORKS devices are lost.

2. Disabling

The SERVICE terminal has similar functionality as the IMPL terminal, except that it is meant to be used for temporary disabling and repairs. Reconfiguration of terminals such as POSITION and SUBPOS in a system in operational mode is thereby not allowed.

3. Parameters

The TYPE terminal specifies the type designation of the LONWORKS communication module (CI572 or CI573). Please note that TYPE **can not be changed** when IMPL=1 and the system is in operational mode.

4. Diagnostics

The LON data base element indicates diagnostics for the CI572 or CI573 communication module. The ERR terminal indicates fatal errors and the WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. One or more diagnostics indicators may be set. A few typical errors are given in the table below:

LON data base element diagnostic information

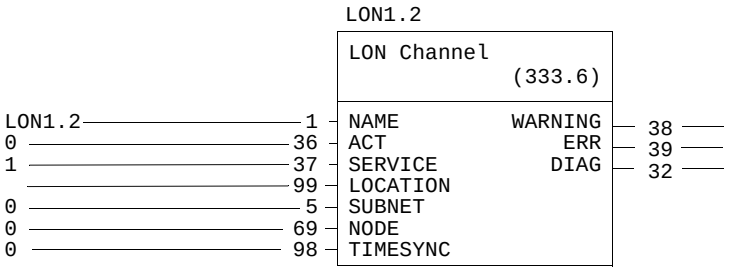
Condition	WARNING	ERR	DIAG_I	Action
Fault corresponding to a channel	1	-	OK	Check channels
Internal software Error	-	1	IE	Toggle IMPL terminal
Passive.	-	-	PSV	Set IMPL terminal
Missing Module	-	1	ME	Insert Module
Faulty Module	-	1	ME	Replace Module
Configuration Error	-	1	CE	Check configuration in DB-element.

LONWORKS Channel LONCHAN

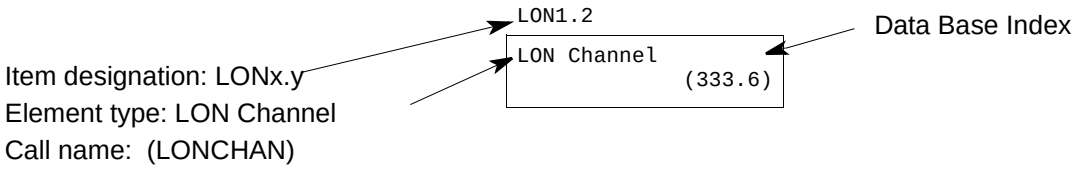
Summary

The LONCHAN data base element specifies one LONWORKS channel in the CI572 or CI573 communication module. The LONCHAN data base element is subordinated to the LON data base element. Two LONCHAN data base elements are automatically created when one LON data base element is created. The LONCHAN data base element contains configuration data and diagnostic information.

Overview



Head



Terminals of LONCHAN

Termi-nal No	Terminal Name	Value entered by	Default Value	PC con-nection data type	Description	Remarks
1	NAME	User	LONx.y	-	Unique **NAME** of the data base element	Maximum 20 char.
36	ACT	User	0	B(r)	**1** = the channel is **ACT**ive **0** = the channel is spare	
37	SERVICE	User	1	B(r/w)	The in-**SERVICE** terminal shows whether the module is in service (=1) or has been taken out of service (=0)	
99	LOCATION	User	-		**LOCATION** of this node	Maximum 6 char.
5	SUBNET	User	0	-	**SUBNET** and **NODE** specifies the LONWORKS address for the controller (AC 400 Series) on this channel. Subnet=0,1.....255 Node=0,1.....127	Note that 0 is not allowed for subnet or node on an active network. Configuration shall match the configuration done in the LNT tool.
69	NODE	User	0	-		
98	TIMESYNC	User	0	-	**TIME SYNC**hronization cyclicity 1...255 sec. 0 = idle	
38	WARNING	System	-	B(r)	**WARNING** flag indicating non-fatal errors.	
39	ERR	System	-	B(r)	**ERR**or flag indicating hardware or configuration error.	
32	DIAG	System	-	-	**DIAG**nostic information	

Function

LONCHAN Set-up Procedure

The LON channel set-up procedure includes:

1. Implementation
2. Disabling
3. Parameters
4. Diagnostics.

1. Implementation

The LONWORKS channel on the communication module is configured with its parameters and started at system INIT if ACT is set to 1. Setting ACT to 1 in a running system means that the LONWORKS channel on the communication module is configured with its parameters and started. Connection to the device on LON is established. Setting ACT to 0 in a system in operational mode means that the LONWORKS channel is shut down and the connection to the LONWORKS devices are lost.

2. Disabling

The SERVICE terminal has similar functionality as the ACT terminal, except that it is meant to be used for temporary disabling and repairs. Reconfiguration of terminals such as SUBNET and NODE in a system in operational mode is thereby not allowed.

3. Parameters

The LOCATION terminal is a 6 characters string for specification of a unique identification of a device in a LONWORKS network. Please note that LOCATION **can not be changed** when ACT=1 and the system is in operational mode.

The SUBNET terminal specifies a number for this specific LON connection, to be used in other data base elements to specify when communicating via or if they are connected to this specific LON connection. Please note that SUBNET **can not be changed** when ACT=1 and the system is in operational mode.

The NODE terminal specifies a unique node number for the Advant Controller 400 Series to be used on this LONWORKS network. Please note that NODE **can not be changed** when ACT=1 and the system is in operational mode.

Terminal TIMESYNC specifies if the LONWORKS channel shall send time synchronization messages on LONWORKS. Please note that only one node can be responsible for sending time synchronization messages on LONWORKS. 0 means that no time synchronization message is sent. A value between 1 and 255 specifies in seconds how often the time synchronization message shall be sent.

4. Diagnostics

The LONCHAN data base element indicates diagnostics for one LONWORKS channel on the CI572 or CI573 communication module. The ERR terminal indicates fatal errors and the WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. One or more diagnostics indicators may be set. A few typical errors are given in the table below:

LONCHAN data base element diagnostic information

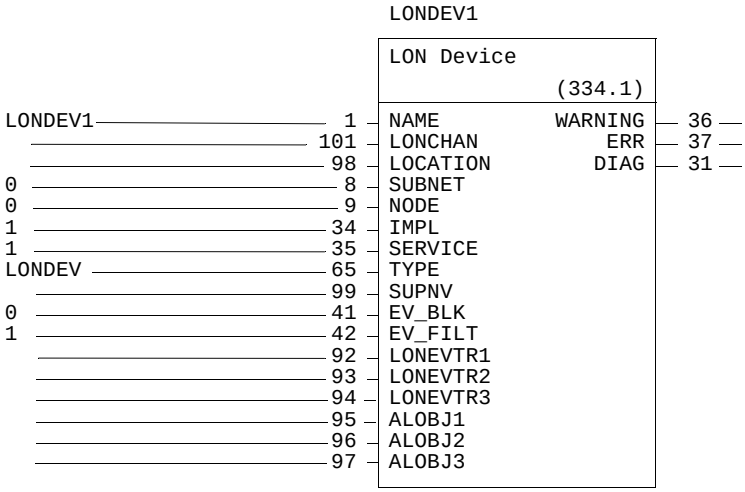
Condition	WARNING	ERR	DIAG_I	Action
Passive.	-	-	PSV	Set ACT terminal
System Error	-	1	SE	Toggle ACT terminal or check hardware
Configuration Error	-	1	CE	Check configuration in DB-element.

LONWORKS Device LONDEV

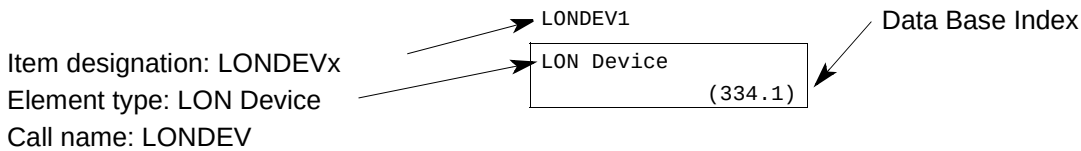
Summary

The LONDEV data base element specifies a LONWORKS device. It provides necessary configuration data to supervise status on the device and make it possible to receive events and alarms from the device.

Overview



Head



Terminals of LONDEV

Terminal No	Terminal Name	Value entered by	Default Value	PC connection data type	Description	Remarks
1	NAME	User	LONDEVx	-	Unique **NAME** of Device	Maximum 20 characters
101	LONCHAN	User	-	-	Reference to the superior **LONCHAN** data base element	
98	LOCATION	User	-		The channel **LOCATION**	Maximum 6 characters
8	SUBNET	User	0	-	**SUBNET** and **NODE** specifies the LONWORKS address for the device on the referenced channel. Subnet=0,1.....255 Node=0,1.....127	Note that 0 is not allowed for subnet and node on an active network.
9	NODE	User	0	-		
34	IMPL	User	1	B(r)	1 = Device is **Implemented**. 0 = Spare	
35	SERVICE	User	1	B(r/w)	The **SERVICE** terminal shows whether the module is in service or has been taken out of service.	
65	TYPE	User	LONDEV	-	The device **TYPE** to be presented on the System Status display in Operator Station	Maximum 10 characters
99	SUPNV	User	-	-	Name of **N**etwork **V**ariable used for **SUP**ervision	
41	EV_BLK	User/PC	0	B(r/w)	1=**BL**oc**K**ing of **EV**ENT indication in Operator Station	
42	EV_FILT	User	1	-	0= Allows to send rudimentary events to OS, if events are not translated 1= Untranslatable events will not be shown	
92	LONEVTR1	User	-	-	Name of first **LONEVTR** defining translation of texts	
93	LONEVTR2	User	-	-	Name of second **LONEVTR** defining translation of texts	
94	LONEVTR3	User	-	-	Name of third **LONEVTR** defining translation of texts	
95	ALOBJ1	User	-	-	Name of DB element (DIEV or MMCX), associated to alarms defined by LONEVTR1	
96	ALOBJ2	User	-	-	Name of DB element (DIEV or MMCX), associated to alarms defined by LONEVTR2	

Termi-nal No	Terminal Name	Value entered by	Default Value	PC con-nection data type	Description	Remarks
97	ALOBJ3	User	-	-	Name of DB element (DIEV or MMCX), associated to alarms defined by LONEVTR3	
36	WARNING	System	-	B(r)	**WARNING** flag indicating non-fatal errors.	
37	ERR	System	-	B(r)	**ERR**or flag indicating hardware or configuration error.	
31	DIAG	System	-	-	**DIAG**nostic information	

Function

The data base element LONDEV provides diagnostic information for the LONWORKS Device connected to an Advant Controller via the LONWORKS network.

LONDEV also defines how to treat the events coming from the device. It is possible to associate events for up to three objects of type DIEV or MMCX. The translation of events from LONWORKS attributes to Advant is defined by data base element referred by the LONEVTRx terminals.

LONDEV Set-up Procedure

The LONWORKS network device set-up procedure includes:

1. Implementation
2. Disabling
3. Parameters
4. Diagnostics.

1. Implementation

It is also possible to disable the LONDEV functionality if IMPL is set to 0.
If IMPL = 0, means no supervision of the device and no events from the device will be reported.

2. Disabling

The SERVICE terminal has similar functionality as the IMPL terminal, except that it is meant to be used for temporary disabling and repairs. Reconfiguration of terminals such as SUBNET and NODE in a system in operational mode is thereby not allowed.

3. Parameters

The LONCHAN terminal is a reference to the superior LONCHAN data base element. Please note that LONCHAN **can not be changed** when IMPL=1 and the system is in operational mode.

The LOCATION terminal is a 6 characters string for specification of a unique identification of a device in a LONWORKS network. Please note that LOCATION **can not be changed** when IMPL=1 and the system is in operational mode.

The SUBNET terminal specifies the subnet number for this specific LONWORKS device represented by the data base element. Please note that SUBNET **can not be changed** when IMPL=1 and the system is in operational mode.

The NODE terminal specifies the node number for the LONWORKS device represented by the data base element. Please note that NODE **can not be changed** when IMPL=1 and the system is in operational mode.

The TYPE terminal can be filled in with a type designation of the connected device. The type is presented in fieldbus System status display in the operator station.

The terminal SUPNV is used to define which Network Variable that shall be used to supervise a LONWORKS device, if the Advant Controller 400 Series shall supervise the device. The variable can be any of the input variables in CI572 or CI573 connected to an output variable of the LONWORKS device represented by this data base element. The referenced input network variable should also make use of either the CYCLETIM or TIMEOUT for proper function, see LONNVI or LONNVO data base elements. Please note that SUPNV **can not be changed** when IMPL=1 and the system is in operational mode.

Event and Alarm handling terminals

See Function in LONEVTR DB-element.

4. Diagnostics

The LONDEV data base element indicates diagnostic information for a LONWORKS device. The ERR terminal indicates fatal errors and WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. One or more diagnostics indicators may be set.

A few typical errors are given in the table below:

LONDEV data base element diagnostic information

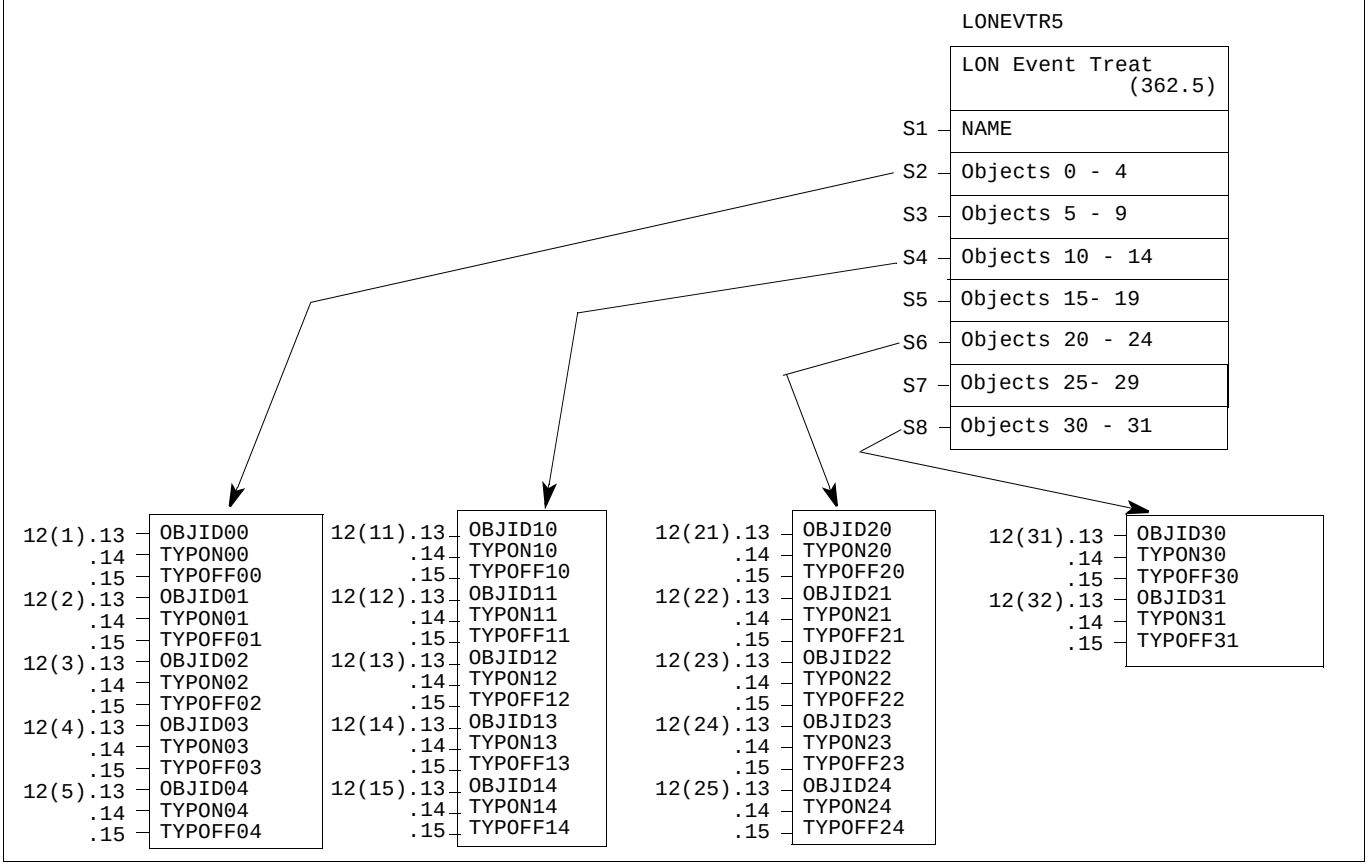
Condition	WARNING	ERR	DIAG_I	Action
Passive.	-	-	PSV	Set IMPL terminal
System Error	-	1	SE	Toggle IMPL terminal or check connected LONWORKS Device
Configuration Error	-	1	CE	Check configuration in DB-element or check connected LONWORKS Device.

LONWORKS Event Treat LONEVTR

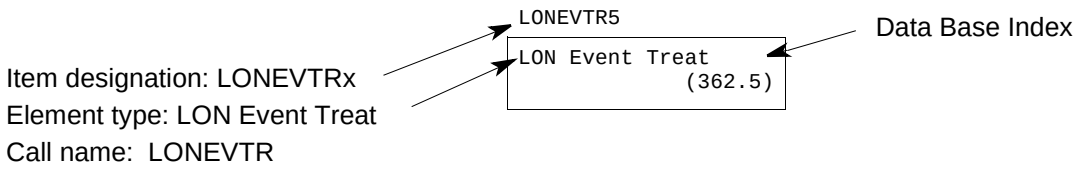
Summary

The LON EVent TReatment data base element specifies the treatment of events received from a LONWORKS Device. The element is referred from LONDEV data base element.

Overview



Head



Terminals of LONEVTR

Terminal No	Terminal Name	Value entered by	Default Value	PC connection data type	Description	Remarks
1	NAME	User	LONEVTRx	-	Unique **NAME** of the data base element.	Maximum 20 chars.
12(1).13	OBJID00	User	0	-	**OBJ**ECT **ID**entity number within LONWORKS device. Alarms are directed to IND100 in corresponding MMCX element 0 - 65535	
12(1).14	TYPON00	User	0	-	Defining alarm **TYPE** state **ON** 0 - 255	
12(1).15	TYPOFF00	User	0	-	Defining alarm **TYPE** state **OFF** 0 - 255	
...						
12(16).13	OBJID15	User	0		**OBJ**ECT **ID**entity number within LONWORKS device. Alarms are directed to IND115 in corresponding MMCX element 0 - 65535	
12(16).14	TYPON15	User	0	-	Defining alarm **TYPE** state **ON** 0 - 255	
12(16).15	TYPOFF15	User	0	-	Defining alarm **TYPE** state **OFF** 0 - 255	
12(17).13	OBJID16	User	0		**OBJ**ECT **ID**entity number within LONWORKS device. Alarms are directed to IND200 in corresponding MMCX element 0 - 65535	
12(17).14	TYPON16	User	0	-	Defining alarm **TYPE** state **ON** 0 - 255	
12(17).15	TYPOFF16	User	0	-	Defining alarm **TYPE** state **OFF** 0 - 255	
...						
12(32).13	OBJID31	User	0		**OBJ**ECT **ID**entity number within LONWORKS device. Alarms are directed to IND215 in corresponding MMCX element 0 - 65535	
12(32).14	TYPON31	User	0	-	Defining alarm **TYPE** state **ON** 0 - 255	
12(32).15	TYPOFF31	user	0	-	Defining alarm **TYPE** state **ON** 0 - 255	

Function

The LONEVTR data base element describes the possible event reasons defined by a LONWORKS device. A LONEVTR data base is referred by one or more LONDEV data base elements.

You can specify up to 32 different combinations of Object Identity and Alarm Type If you need more event texts, the LONDEV data base element can refer to up to 3 LONEVTR elements. The alarms are directed to the DIEV or MMCX object pointed at by the corresponding ALOBJx terminal in the LONDEV data base element.

An event message from a LONWORKS device is received by the controller through a Network Variable in accordance with the LONWORKS Marks data type SNVT_ALARM network variable type.

The OBJ_ID and ALARM_TYPE items of the NV are checked against the terminals OBJIDxx and TYPONxx/TYPOFFxx terminals, in order to determine what type of event/alarm message that shall be presented in operator station(s).

Group Alarm

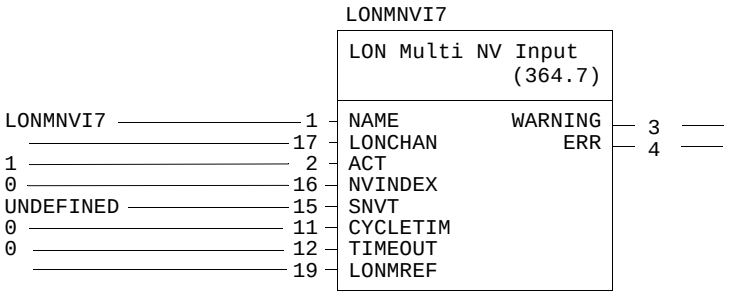
Since it is very difficult (sometimes impossible) to guarantee correct order of coming and going alarms, which is necessary for the group alarm function, the recommendation is **not to use the connection to Group Alarm**, for DIEV and MMCX in conjunction with LONEVTR and LONDEV.

LONWORKS Multiple Input Variable LONMNVI

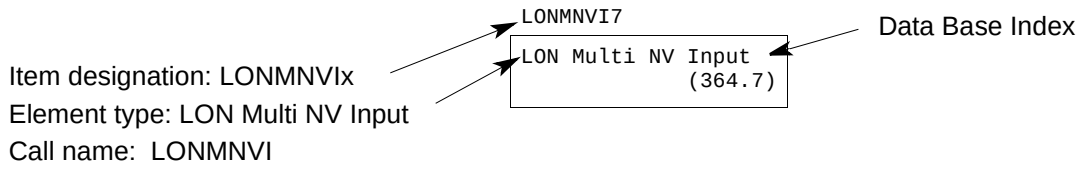
Summary

LONMNVI data base element specifies the data required to configure a multiple input network variable (NV). LONMNVI is used if two or more devices are sending to one network variable.

Overview



Head



Terminals of LONMNVI

Termi-nal No	Terminal Name	Value entered by	Default Value	PC con-nection data type	Description	Remarks
1	NAME	User	LONMNVIx		Unique **NAME** of NV	Max.20 char.
17	LONCHAN	User	-	-	Reference to the superior **LONCHAN** data base element	
2	ACT	User	1	-	1=NV is **ACT**ive 0= NV is spare	
16	NVINDEX	User	0	-	**INDEX** number of this **NV** 1 - 1400	Unique per channel
15	SNVT	User	UNDEFINED	-	**S**tandard **NV T**ype: SNVT number #xxx, SNVT name or Length in bytes	See Function below and Table 6 page 455
11	CYCLETIM	User	0	-	**CYCLE TIM**e (in seconds) for forced cyclic fetch of data from the source: 1 - 255, 0 = data automatically sent by source at update. To be used when the data is not automatically sent at change or cyclically by the source.	Do not use together with TIMEOUT.
12	TIMEOUT	User	0	-	**TIMEOUT** (in seconds) specifies how long time the input variable can wait for receiving data, until it shall indicate by error marking data that it no longer is fresh: 1 - 255, 0 = no time-out	Do not use together with CYCLETIM.
19	LONMREF	User		-	Reference to the **LONMREF** data base element.	
3	WARNING	System	-	B(r)	**WARNING** flag indicating non-fatal errors.	
4	ERR	System	-	B(r)	**ERR**or flag indicating hardware or configuration error.	

Function

The LONMNVI data base element defines an multiple input LONWORKS Network Variable on one LONWORKS channel, residing in a CI572 or CI573 communication module. This type of data base element is used for many-to-one connections for an input variable in the CI572 or CI573. A number of terminals described below determines the behavior of the variable.

The LONMNVI data base element can be activated on the ACT terminal.

NOTE

Only the ACT and NAME terminals can be changed when ACT=1 and the system is in operational mode.

Each LONWORKS Channel contains 1400 Network Variables (NV) of input type (numbered 1 to 1400) and 600 Network Variables of output type (numbered 1401 to 2000). Terminal NVINDEX defines the index for this Network Variable. Together with terminal LONCHAN a unique specification of one NV within one AC400 Series controller is made.

NOTE

The LONMNVI consumes one NV per device specified in the referenced LONMREF data base element. If you are using 5 LONMNVI data base elements with references to the same LONMREF data base element, and it includes references to 10 devices, you have consumed 50 Network Variables of the total 1400 that are available.

The SNVT terminal defines the standard Network Variable Type, as defined by the LONMARK standard to be used for this variable.

The CYCLETIM terminal can be set to a value when the source, typically a LONWORKS device output Network Variable, not automatically send its data cyclically or at update. Otherwise this terminal shall be set to 0, to avoid to much load on the LONWORKS network or the CI572/CI573 module. It is not recommended to use the TIMEOUT function together with the CYCLETIM function, the data will anyhow be marked with an error if the data could not be read from the source.

The TIMEOUT terminal specifies how long time the input variable can wait for receiving data, until it shall indicate by error marking data that it no longer is fresh. A value of 0, means that it will wait forever. It is typically set to a non-zero value for Network Variables being used to supervise the device (SUPNV terminal in the LONDEV database element) and for critical data used in the application program.

The LONMREF terminal is used to reference an LONMREF data base element, which contains multiple references to LONWORKS devices which sends data to this variable.

The ERR and WARNING terminals indicates configuration errors.

SNVT terminal

You can enter the terminal SNVT in three different ways:

- Enter the length of variable data on terminal SNVT using digits only.
- Enter SNVT no. on terminal SNVT, as “#xxx”, where xxx is the number of SNVT.
- Enter SNVT name on terminal SNVT.

SNVT table

Table 6. SNVT table

SNVT no	SNVT name	SNVT no	SNVT name	SNVT no	SNVT name
0	UNDEFINED	22	“22 SNVT_lev_disc”	44	“44 SNVT_volt”
1	“1 SNVT_amp”	23	“23 SNVT_mass”	45	“45 SNVT_volt_dbmv”
2	“2 SNVT_amp_mil”	24	“24 SNVT_mass_kilo”	46	“46 SNVT_volt_kilo”
3	“3 SNVT_angle”	25	“25 SNVT_mass_mega”	47	“47 SNVT_volt_mil”
4	“4 SNVT_angle_vel”	26	“26 SNVT_mass_mil”	48	“48 SNVT_amp_f”
5	“5 SNVT_btu_kilo”	27	“27 SNVT_power”	49	“49 SNVT_angle_f”
6	“6 SNVT_btu_mega”	28	“28 SNVT_power_kilo”	50	“50 SNVT_angle_vel_f”
7	“7 SNVT_char_ascii”	29	“29 SNVT_ppm”	51	“51 SNVT_count_f”
8	“8 SNVT_count”	30	“30 SNVT_press”	52	“52 SNVT_count_inc_f”
9	“9 SNVT_count_inc”	31	“31 SNVT_res”	53	“53 SNVT_flow_f”
10	“10 SNVT_date_cal”	32	“32 SNVT_res_kilo”	54	“54 SNVT_length_f”
11	“11 SNVT_date_day”	33	“33 SNVT_sound_db”	55	“55 SNVT_lev_cont_f”
13	“13 SNVT_elec_kwh”	34	“34 SNVT_speed”	56	“56 SNVT_mass_f”
14	“14 SNVT_elec_whr”	35	“35 SNVT_speed_mil”	57	“57 SNVT_power_f”
15	“15 SNVT_flow”	36	“36 SNVT_str_asc”	58	“58 SNVT_ppm_f”
16	“16 SNVT_flow_mil”	37	“37 SNVT_str_int”	59	“59 SNVT_press_f”
17	“17 SNVT_length”	38	“38 SNVT_telcom”	60	“60 SNVT_res_f”
18	“18 SNVT_length_kilo”	39	“39 SNVT_temp”	61	“61 SNVT_sound_db_f”
19	“19 SNVT_length_micr”	41	“41 SNVT_vol”	62	“62 SNVT_speed_f”
20	“20 SNVT_length_mil”	42	“42 SNVT_vol_kilo”	63	“63 SNVT_temp_f”
21	“21 SNVT_lev_cont”	43	“43 SNVT_vol_mil”	64	“64 SNVT_time_f”

Table 6. SNVT table

SNVT no	SNVT name	SNVT no	SNVT name	SNVT no	SNVT name
65	“65 SNVT_vol_f”	94	“94 SNVT_preset”	122	“122 SNVT_defr_state”
66	“66 SNVT_volt_f”	95	“95 SNVT_switch”	123	“123 SNVT_time_min”
67	“67 SNVT_btu_f”	96	“96 SNVT_trans_table”	124	“124 SNVT_time_hour”
68	“68 SNVT_elec_whr_f”	97	“97 SNVT_override”	125	“125 SNVT_ph”
69	“69 SNVT_config_src”	98	“98 SNVT_pwr_fact”	126	“126 SNVT_ph_f”
70	“70 SNVT_color”	99	“99 SNVT_pwr_fact_f”	127	“127 SNVT_chlr_status”
71	“71 SNVT_grammage”	100	“100 SNVT_density”	128	“128 SNVT_tod_event”
72	“72 SNVT_grammage_f”	101	“101 SNVT_density_f”	129	“129 SNVT_smo_obscur”
73	“73 SNVT_file_req”	102	“102 SNVT_rpm”	130	“130 SNVT_fire_test”
74	“74 SNVT_file_status”	103	“103 SNVT_hvac_emerg”	131	“131 SNVT_temp_ror”
75	“75 SNVT_freq_f”	104	“104 SNVT_angle_deg”	132	“132 SNVT_fire_init”
76	“76 SNVT_freq_hz”	105	“105 SNVT_temp_p”	133	“133 SNVT_fire_indcte”
77	“77 SNVT_freq_kilohz”	106	“106 SNVT_temp_setp”	134	“134 SNVT_time_zone”
78	“78 SNVT_freq_milhz”	107	“107 SNVT_time_sec”	135	“135 SNVT_earth_pos”
79	“79 SNVT_lux”	108	“108 SNVT_hvac_mode”	136	“136 SNVT_reg_val”
81	“81 SNVT_lev_percent”	109	“109 SNVT_occupancy”	137	“137 SNVT_reg_val_ts”
82	“82 SNVT_multiplier”	110	“110 SNVT_area”	138	“138 SNVT_volt_ac”
83	“83 SNVT_state”	111	“111 SNVT_hvac_overid”	139	“139 SNVT_amp_ac”
84	“84 SNVT_time_stamp”	112	“112 SNVT_hvac_status”	143	“143 SNVT_turbidity”
85	“85 SNVT_zerospan”	113	“113 SNVT_press_p”	144	“144 SNVT_turbidity_f”
86	“86 SNVT_magcard”	114	“114 SNVT_address”	145	“145 SNVT_hvac_type”
87	“87 SNVT_elapsed_tm”	115	“115 SNVT_scene”	243	“243 NV_power_report”
88	“88 SNVT_alarm”	116	“116 SNVT_scene_cfg”	244	“244 NV_voltage_report”
89	“89 SNVT_currency”	117	“117 SNVT_setting”	247	“247 NV_clock”
90	“90 SNVT_file_pos”	118	“118 SNVT_evap_state”	248	“248 NV_warning”
91	“91 SNVT_muldiv”	119	“119 SNVT_therm_mode”	250	“250 NV_motor_ctrl”
92	“92 SNVT_obj_request”	120	“120 SNVT_defr_mode”	251	“251 NV_motor_state”
93	“93 SNVT_obj_status”	121	“121 SNVT_defr_term”	252	“252 NV_current_report”

Table 7. NVT table

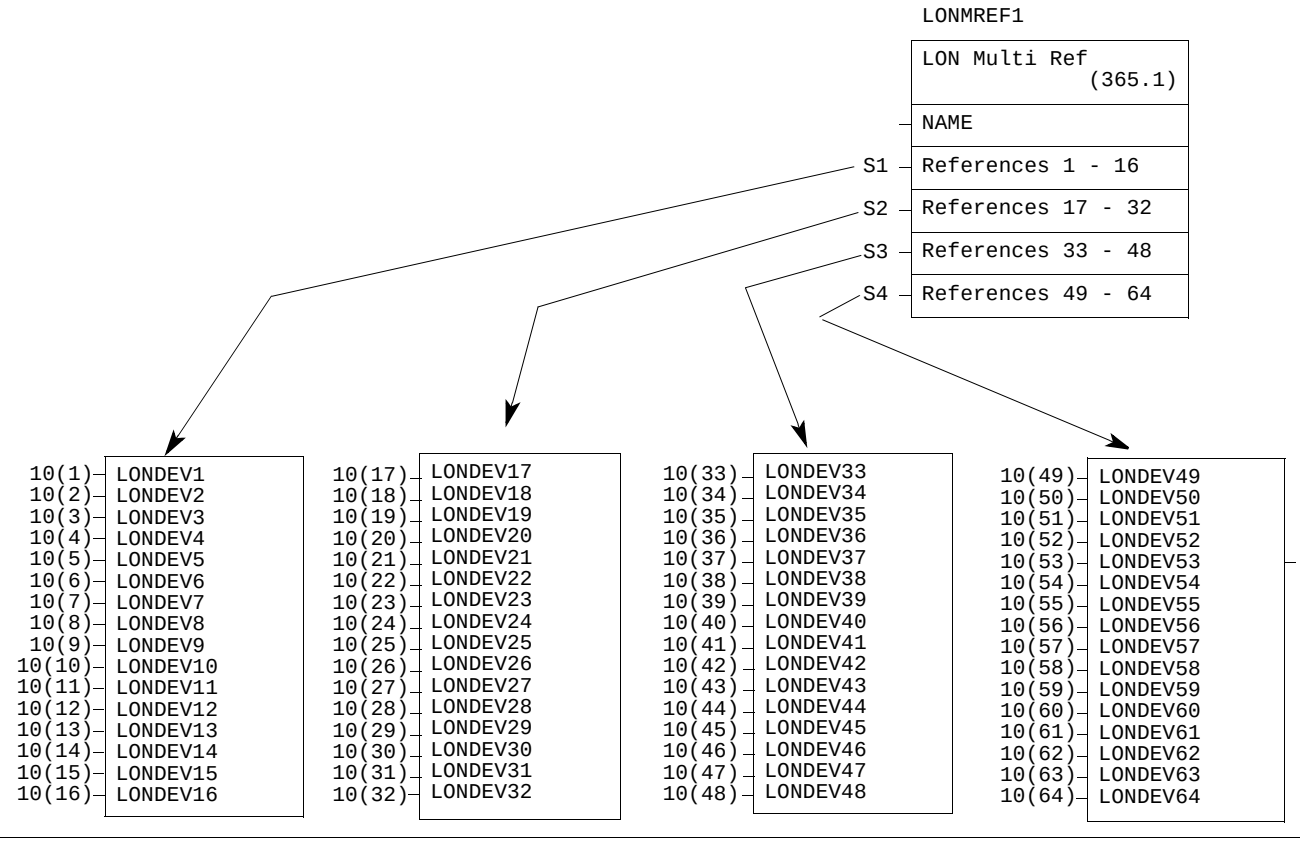
NVT	NVT name	NVT	NVT name	NVT	NVT name
256	“1 Byte”	267	“12 Bytes”	278	“23 Bytes”
257	“2 Bytes”	268	“13 Bytes”	279	“24 Bytes”
258	“3 Bytes”	269	“14 Bytes”	280	“25 Bytes”
259	“4 Bytes”	270	“15 Bytes”	281	“26 Bytes”
260	“5 Bytes”	271	“16 Bytes”	282	“27 Bytes”
261	“6 Bytes”	272	“17 Bytes”	283	“28 Bytes”
262	“7 Bytes”	273	“18 Bytes”	284	“29 Bytes”
263	“8 Bytes”	274	“19 Bytes”	285	“30 Bytes”
264	“9 Bytes”	275	“20 Bytes”	286	“31 Bytes”
265	“10 Bytes”	276	“21 Bytes”		
266	“11 Bytes”	277	“22 Bytes”		

LONWORKS Multiple Reference LONMREF

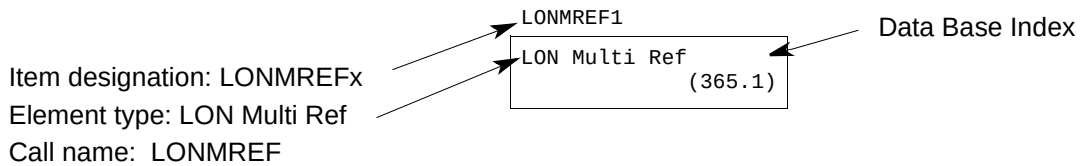
Summary

LONMREF data base element specifies multiply references to data base element LONDEV. LONMREF data base element is referred from one or several LONMNVI data base elements.

Overview



Head



Terminals of LONMREF

Termi-nal No	Terminal Name	Value entered by	Default Value	PC con-nection data type	Description	Remarks
1	NAME	User	LONMREFx		Unique data base element **NAME**	Maximum 20 char.
10(1) . . 10(64)	LONDEV1 . . LONDEV64	User	-	-	Names of **LONDEV** data base elements	

Function

The LONMREF data base element is to be used together with the LONMNVI data base element to specify an input Network Variable with multiple connections (many-to-one connections).

In such connections, the source address is used to distinguish between the data from different connected network variables.

The LONMREF data base element only contains the references to the devices (maximum 64) that can send data to one Network Variable of type LONMNVI.

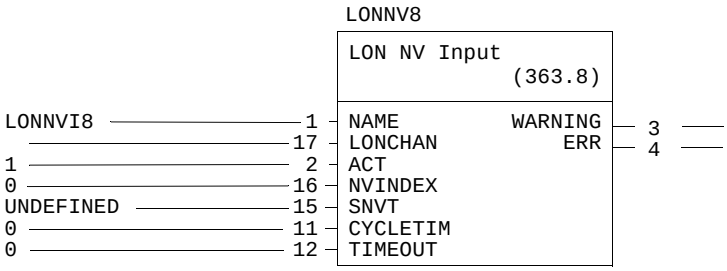
You specify the connection to the LONWORKS device by entering the name of the corresponding LONDEV data base element to a LONDEVx terminal. This means that when you use many-to-one connections, you must create LONDEV data base elements for all of the LONWORKS devices that have output network variables connected to the network variable defined by the LONMNVI data base element.

LONWORKS Input Variable LONNVI

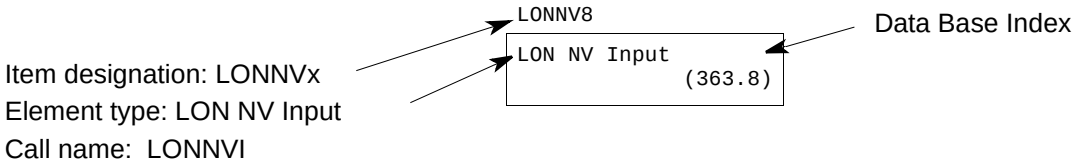
Summary

LONNVI data base element specifies the data required to configure a network variable (NV) of input type.

Overview



Head



Terminals of LONNVI

Termi-nal No	Terminal Name	Value entered by	Default Value	PC con-nection data type	Description	Remarks
1	NAME	User	LONNVx		Unique **NAME** of the NV	Max.20 char.
17	LONCHAN	User	-	-	Reference to the superior **LONCHAN** data base element	
2	ACT	User	1	-	1 = NV is **ACT**ive 0 = NV is spare	
16	NVINDEX	User	0	-	**INDEX** number of this **NV** 1 - 1400	Unique per channel
15	SNVT	User	UNDEFINED	-	**S**tandard **NV T**ype: SNVT number #xxx, SNVT name or Length in bytes	See Function below and Table 6 page 455
11	CYCLETIM	User	0	-	**CYCLE TIM**e (in seconds) for forced cyclic fetch of data from the source: 1 - 255, 0 = data automatically sent by source at update. To be used when the data is not automatically sent at change or cyclically by the source.	Do not use together with TIMEOUT.
12	TIMEOUT	User	0	-	**TIMEOUT** (in seconds) specifies how long time the input variable can wait for receiving data, until it shall indicate by error marking data that it no longer is fresh: 1 - 255, 0 = no time-out	Do not use together with CYCLETIM.
3	WARNING	System	-	B(r)	**WARNING** flag indicating non-fatal errors.	
4	ERR	System	-	B(r)	**ERR**or flag indicating hardware or configuration error.	

Function

The LONNVI data base element defines an input LONWORKS Network Variable on one LONWORKS channel, residing in a CI572 or CI573 communication module. A number of terminals described below determines the behavior of the variable.

The LONNVI data base element can be activated on the ACT terminal.

NOTE

Only the ACT and NAME terminals can be changed when ACT=1 and the system is in operational mode.

Each LONWORKS Channel contains 1400 Network Variables (NV) of input type (numbered 1 to 1400) and 600 Network Variables of output type (numbered 1401 to 2000). Terminal NVINDEX defines the index for this Network Variable. Together with terminal LONCHAN a unique specification of one NV within one AC400 Series controller is made.

The SNVT terminal defines the standard Network Variable Type, as defined by the LONMARK standard to be used by this variable. See Table 6 page 455

The CYCLETIM terminal can be set to a value when the source, typically a LONWORKS device output Network Variable, not automatically send its data cyclically or at update. Otherwise this terminal shall be set to 0, to avoid to much load on the LONWORKS network or the CI572/CI573 module. It is not recommended to use the TIMEOUT function together with the CYCLETIM function, the data will anyhow be marked with an error if the data could not be read from the source.

The TIMEOUT terminal specifies how long time the input variable can wait for receiving data, until it shall indicate by error marking data that it no longer is fresh. A value of 0, means that it will wait forever. It is typically set to a non.zero value for Network Variables being used to supervise the device (SUPNV terminal in the LONDEV database element) and for critical data used in the application program.

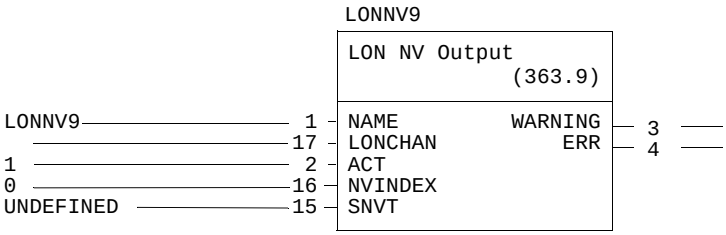
The ERR and WARNING terminals indicates configuration errors.

LONWORKS Output Variable LONNVO

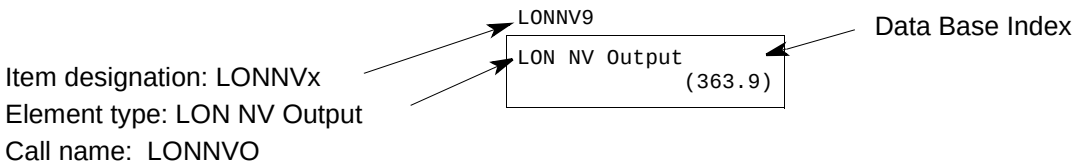
Summary

LONNVO data base element specifies the data required to configure a network variable (NV) of output type.

Overview



Head



Terminals of LONNVO

Terminal No	Terminal Name	Value entered by	Default Value	PC connection data type	Description	Remarks
1	NAME	User	LONNVx	-	Unique **NAME** of the NV	Max.20 char.
17	LONCHAN	User	-	-	Reference to the superior **LONCHAN** data base element	
2	ACT	User	1	-	1=NV is **ACT**ive 0= is spare	
16	NVINDEX	User	0	-	**INDEX** number of this **NV** 1401 - 2000	Unique per channel
15	SNVT	User	UNDEFINED	-	**S**tandard **NV T**ype: SNVT number #xxx, SNVT name or Length in bytes	See Function below and Table 6 page 455
3	WARNING	System	-	B(r)	**WARNING** flag indicating non-fatal errors.	
4	ERR	System	-	B(r)	**ERR**or flag indicating hardware or configuration error.	

Function

The LONNVO data base element defines an output LONWORKS Network Variable on one LONWORKS channel, residing in a CI572 or CI573 communication module. A number of terminals described below determines the behavior of the variable.

The LONNVO data base element can be activated on the ACT terminal.

NOTE

Only the ACT and NAME terminals can be changed when ACT=1 and the system is in operational mode.

Each LONWORKS Channel contains 1400 Network Variables (NV) of input type (numbered 1 to 1400) and 600 Network Variables of output type (numbered 1401 to 2000). Terminal NVINDEX defines the index for this Network Variable. Together with terminal LONCHAN a unique specification of one NV within one AC400 Series controller is made.

The SNVT terminal defines the standard Network Variable Type, as defined by the LONMARK standard to be used by this variable. See Table 6 page 455.

The ERR and WARNING terminals indicates configuration errors.

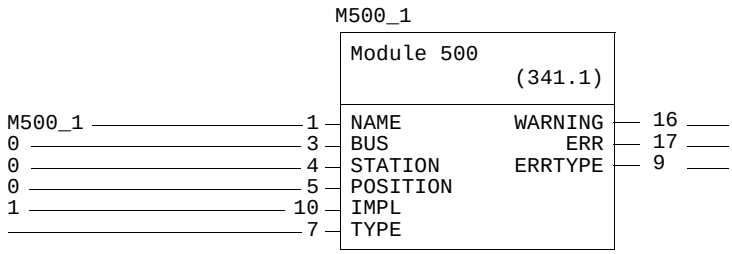
Module 500 M500

Summary

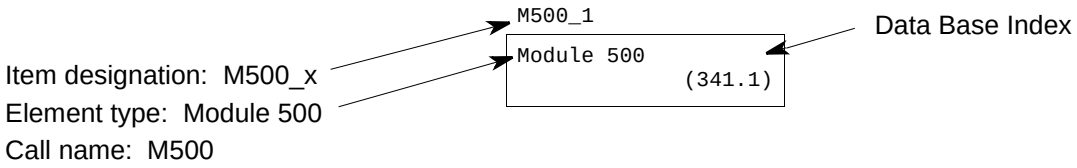
The data base element Module 500 (hardware module of Series 500) represents various hardware types in Advant Controller 450.

Module 500 passes error information from the PC program application to System Status.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	M500_x	–	Unique **NAME** of the module.	–
3	BUS	predef	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
4	STATION	predef	0	–	**STATION**. Part of Address.	
10	POSITION	user	0	–	**POSITION**. Part of Address.	
10	IMPL	user	1	–	Module is **IMPL**emented.	–
7	TYPE	user	–	–	The **TYPE** designation of the hardware module.	10 character string.
16	WARNING	PC	0	B(r/w)	**WARNING** flag indicating non-fatal errors.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
17	ERR	PC	0	B(r/w)	**ERR**or.	–
9	ERRTYPE	PC	0	I(r/w)	**ERR**or **TYPE**.	–

Function

The main functions of the data base element M500 are to:

- indicate where in the subrack a hardware module is placed
- pass error information from a PC program to System Status.

NOTE

Hardware types which have “their own” data base elements, for instance CI531, CI532Vxx, and PU535, do not use the data base element M500.

Normal configuration

It is sufficient to modify the following inputs:

NAME The name is referenced by the PC program. The name is also presented in System Status. (You may use the default NAME, e.g. M500_x.)

POSITION See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.

SUBPOS See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.

TYPE Hardware type designation (does not influence function).

Special configuration

IMPL The input IMPL means implemented. When IMPL=0, the PC program does not access the hardware. When IMPL=1, you are allowed to change positions of the hardware module, i.e. modify input POSITION (also when the Controller is in operation mode).

NAME The NAME is presented in the System Status display “Node Status”.

WARNING When output WARNING is 1, there is a “warning” (yellow square) in the Node Status display.

ERR When output ERROR is 1, there is an “error” (red square) in the System Status display.

ERRTYPE Error type.

The outputs ERR, WARNING, and ERRTYPE are to be connected to PC element outputs.

The PC program decides when to set ERR, WARNING, and ERRTYPE.

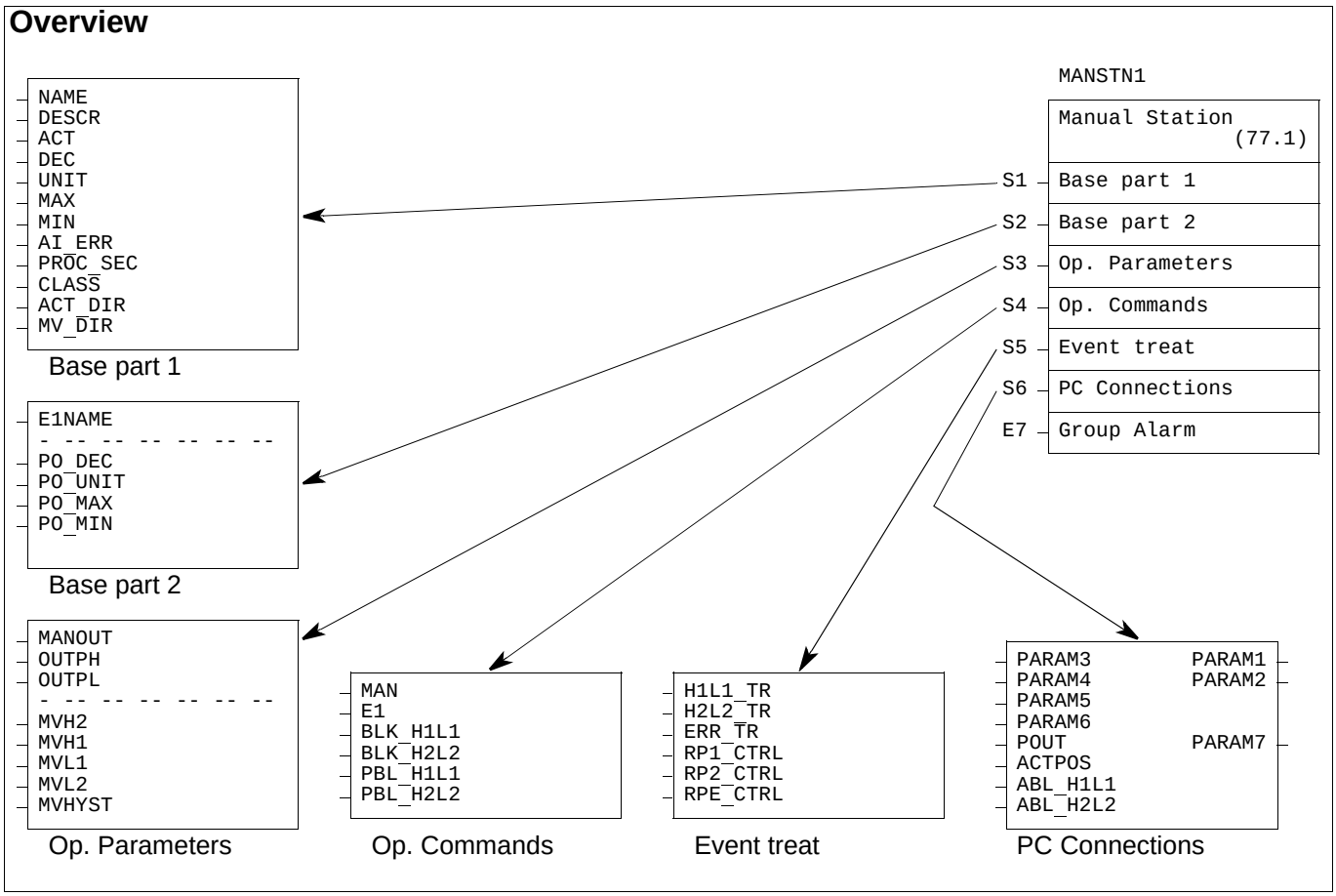
Manual Station MANSTN

Summary

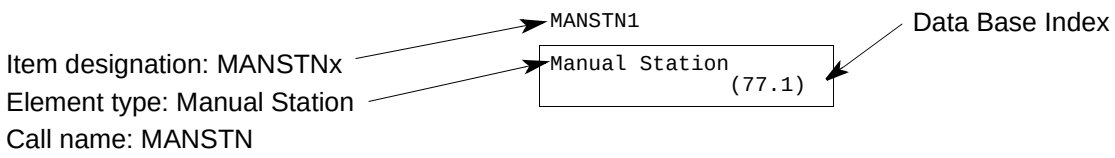
The Manual Station data base element is used to build up Advant Station 500 Series Operator Station functions for the MANSTN functional unit. Some static information in the displays can be given. Parameters which can be changed from the dialog can be given start values. The element performs an interface between the PC-program/process function and Advant Station 500 Series Operator Station.

For further information, please refer to the description of the functional unit MANSTN. For information about the extension parts of Group Alarm see data base element Group Member.

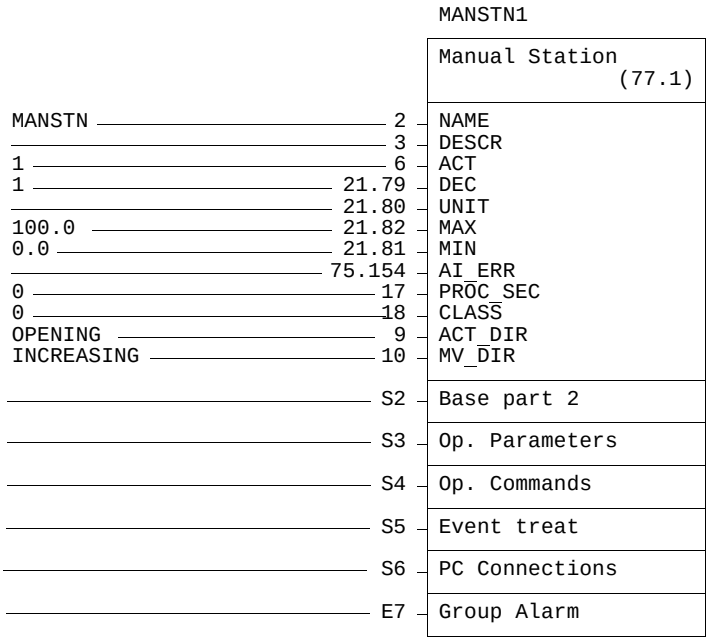
Overview



Head



Base part 1



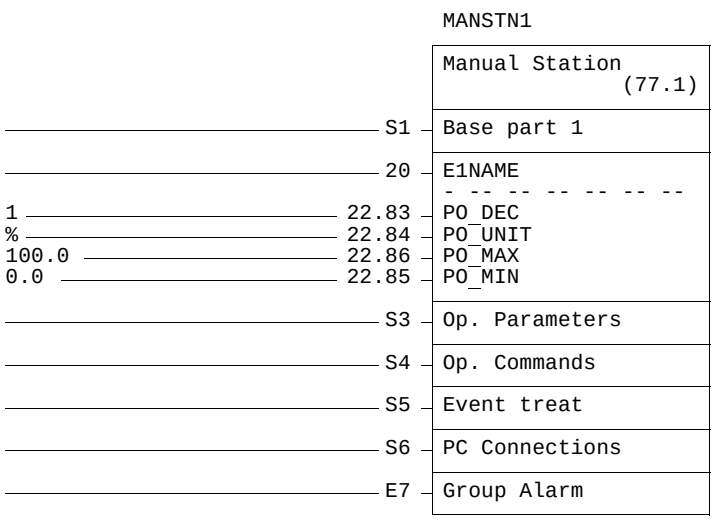
Terminal Description, Base part 1

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	NAME	user	MAN STNx	–	Each Manual Station must have a unique **NAME**. E.g. HICA112.	Max. 20 characters. Spaces are not allowed.
3	DESCR	user	–	–	This **DESCR**iption of the Manual Station will be shown in Operator Station.	Max. 20 characters. You may enter any information regarding the controller.
6	ACT	user	1	B(r/w)	1=The generator communication is **ACT**ive.	0=dialog is blocked and events are not updated.

Terminal Description, Base part 1 (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
21.79	DEC	user	1	–	The number of **DEC**imals for measured value and its alarm limits.	A total number of 5 figures plus point and sign can be presented. 0 - 6 decimals.
21.80	UNIT	user	–	A6(r)	The **UNIT** of the measured value in engineering unit.	Max. 6 characters shown in Operator Station and data base element.
21.82	MAX	user	100.0	R(r/w)	**MAX**imum value within measuring range.	Used for scaling of bar graph.
21.81	MIN	user	0.0	R(r/w)	**MIN**imum value within measuring range.	Used for scaling of bar graph.
75.154	AI_ERR	user	–	–	Reference to the Analog Input element which is used for the measured value.	Connects error flag in the analog input to MANSTN. For example FT107. Change is carried out at next system init.
17	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
18	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
9	ACT_DIR	user	OPE NING	B(r/w)	Used for presentation in the object and group displays. OPENING: actuator open at 100% output. CLOSING: actuator closed at 100% output.	–
10	MV_DIR	user	INCREA SING	B(r/w)	Used for presentation in the object and group display. INCREASING: measured value increases at increasing output. DECREASING: measured value decreases at increasing output.	–

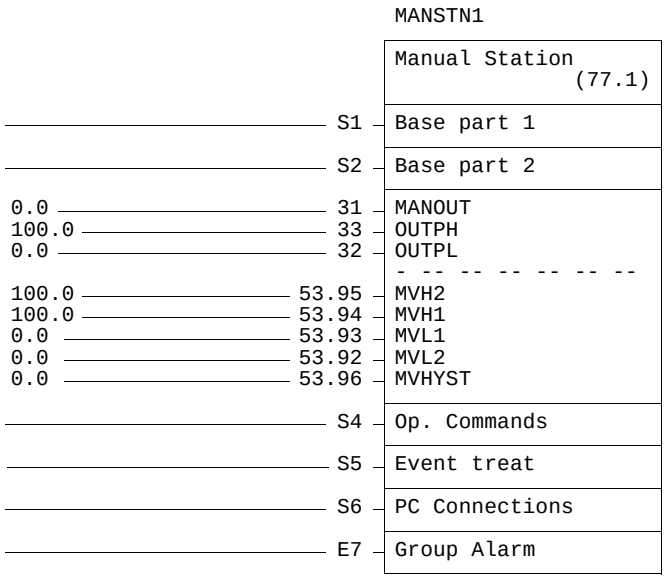
Base part 2



Terminal Description, Base part 2

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
20	E1NAME	user	–	–	**NAME** of **E**xternal reference.	The text entered here will be presented in the object display under ”CONTROL MODE”. Max 20 characters.
22.83	PO_DEC	user	1	–	The number of **DEC**imals for **P**rocess **O**utput value presentation.	A total number of 5 figures plus point and sign can be presented. DEC can be 0 - 6.
22.84	PO_UNIT	user	%	A6(r)	The **UNIT** for the **P**rocess **O**utput value in engineering unit.	Max. 6 characters shown in Operator Station and data base element.
22.86	PO_MAX	user	100.0	R(r/w)	**MAX**imum **P**rocess **O**utput value.	Used for scaling of bar graph.
22.85	PO_MIN	user	0.0	R(r/w)	**MIN**imum **P**rocess **O**utput value.	Used for scaling of bar graph.

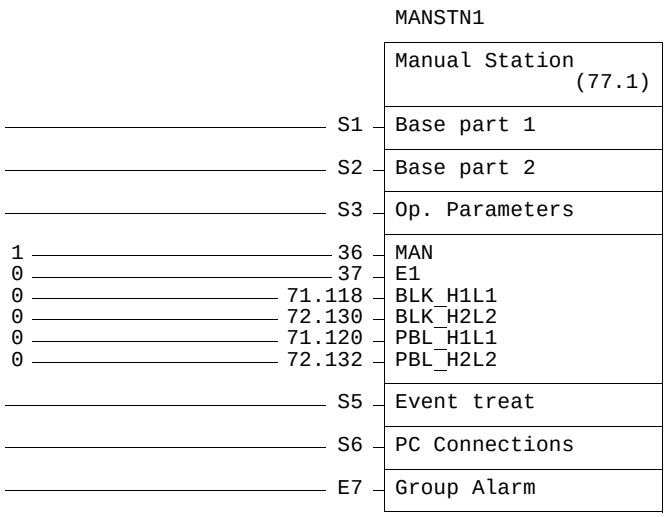
Operators Parameters



Terminal Description, Operators Parameters

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
31	MANOUT	dialog	0.0	R(r/w)	**MAN**ual **OUT**put.	Unit acc. to PO_UNIT.
33	OUTPH	dialog	100.0	R(r/w)	**OUTP**ut **H**igh limit.	Unit acc. to PO_UNIT.
32	OUTPL	dialog	0.0	R(r/w)	**OUTP**ut **L**ow limit.	Unit acc. to PO_UNIT.
53.95	MVH2	dialog	100.0	R(r/w)	Alarm limit **H2** of **M**easured **V**alue.	Unit acc. to PO_UNIT.
53.94	MVH1	dialog	100.0	R(r/w)	Alarm limit **H1** of **M**easured **V**alue.	Unit acc. to PO_UNIT.
53.93	MVL1	dialog	0.0	R(r/w)	Alarm limit **L1** of **M**easured **V**alue.	Unit acc. to PO_UNIT.
53.92	MVL2	dialog	0.0	R(r/w)	Alarm limit **L2** of **M**easured **V**alue.	Unit acc. to PO_UNIT.
53.96	MVHYST	dialog	0.0	R(r)	**HYST**eresis for alarm limits of **M**easured **V**alue.	Unit acc. to PO_UNIT.

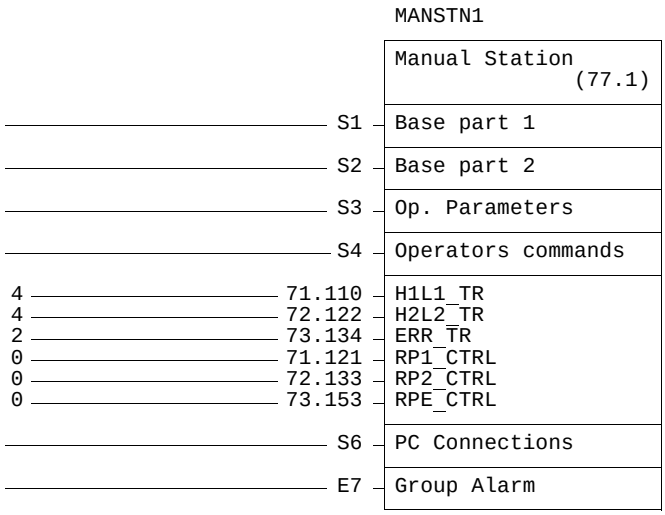
Operators Commands



Terminal Description, Operators Commands

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
36	MAN	dialog	1	B(r/w)	**MAN**ual mode.	Converted to pulse by the system.
37	E1	dialog	0	B(r/w)	**E**xternal mode **1**.	Converted to pulse by the system.
71.118	BLK_H1L1	dialog	0	–	**BL**oc**K** alarms **H1**, **L1**.	–
71.130	BLK_H2L2	dialog	0	–	**BL**oc**K** alarms **H2**, **L2**.	–
71.120	PBL_H1L1	dialog	0	–	**BL**ock **P**rinter for **H1** and **L1** alarms. Blocking of printer for H1 and L1 alarms.	–
72.132	PBL_H2L2	dialog	0	–	**BL**ock **P**rinter for **H2** and **L2** alarms. Blocking of printer for H2 and L2 alarms.	–

Event treat



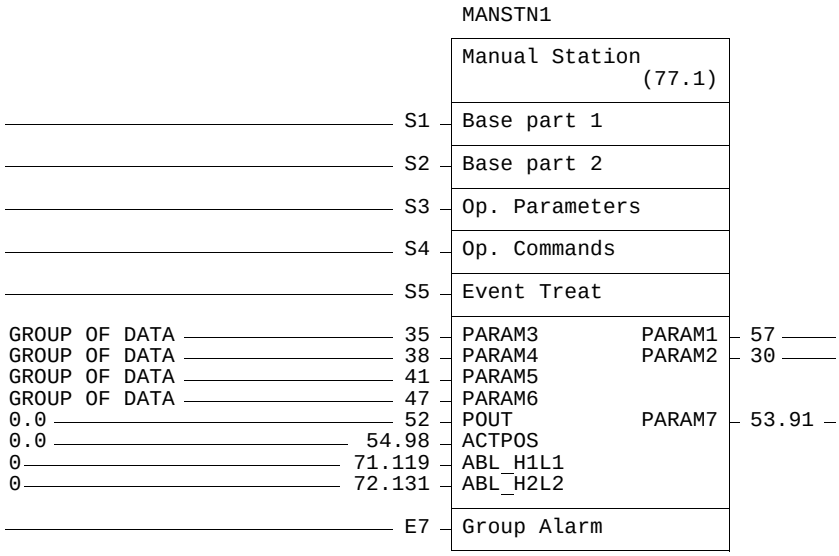
Terminal Description, Event treat

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
71.110	H1L1_TR	user	4	–	Alarm **H1** and **L1 TR**eatment. Instance number of the data base element Event Treat located in Operator Station and defining event treatment of the alarms H1 and L1.	–
72.122	H2L2_TR	user	4	–	Alarm **H2** and **L2 TR**eatment. Instance number of the data base element Event Treat located in Operator Station and defining event treatment of the alarms H2 and L2.	–
73.134	ERR_TR	user	2	–	**ERR**or **TR**eatment. Instance number of the data base element Event Treat located in Operator Station and defining event treatment of signal error in the analog input connected to the manual station.	–
71.121	RP1_CTRL	user	0	–	**R**e**P**eat fail **C**on**TR**o**L** for alarms H**1** and L**1**. Blocking of repeating H1 and L1 alarms.	–
72.133	RP2_CTRL	user	0	–	**R**e**P**eat fail **C**on**TR**o**L** for alarms H**2** and L**2**. Blocking of repeating H2 and L2 alarms.	–

Terminal Description, Event treat (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
73.153	RPE_CTRL	user	0	–	**R**e**P**eat fail **C**on**TR**o**L** for signal **E**rror. Blocking of repeating signal error in the analog input connected to the manual station.	–

PC Connections



Terminal Description, PC Connections

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
35	PARAM3	PC	–	I(r/w)	Group of data to be connected to the PC element connections **PARAM3**A and **PARAM3**B.	–
38	PARAM4	PC	–	I(r/w)	Group of data to be connected to the PC element connection **PARAM4**.	–
41	PARAM5	PC	–	I(r/w)	Group of data to be connected to the PC element connection **PARAM5**.	–
47	PARAM6	PC	–	A16(r/w)	Group of data to be connected to the PC element connection **PARAM6**.	–

Terminal Description, PC Connections (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
52	POUT	PC	0.0	R(r/w)	To be connected to the **P**C element connection **OUT**. (For display purposes).	–
54.98	ACTPOS	PC	0.0	R(r/w)	To be connected by any PC element to the AI channel measuring the **ACT**uator **POS**ition.	–
71.119	ABL_H1L1	PC	0	B(r/w)	**A**uto **BL**ock alarms **H1** and **L1**.	See section Application Example in the functional unit manual.
72.131	ABL_H2L2	PC	0	B(r/w)	**A**uto **BL**ock alarms **H2** and **L2**.	See section Application Example in the functional unit manual.
57	PARAM1	system	–	I(r/w)	Group of data to be connected to the PC element connection **PARAM1**.	–
30	PARAM2	system	–	A16(r/w)	Group of data to be connected to the PC element connection **PARAM2**.	–
53.91	PARAM7	system	–	A24(r/w)	Group of data to be connected to the PC element connection **PARAM7** if C1=1.	–

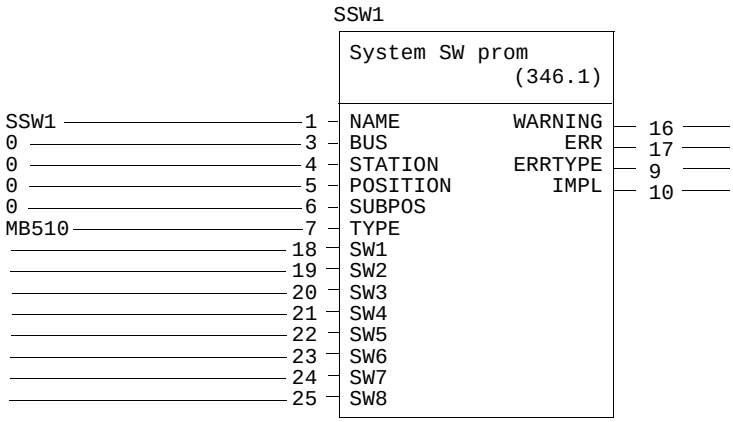
System SW prom MB510

Summary

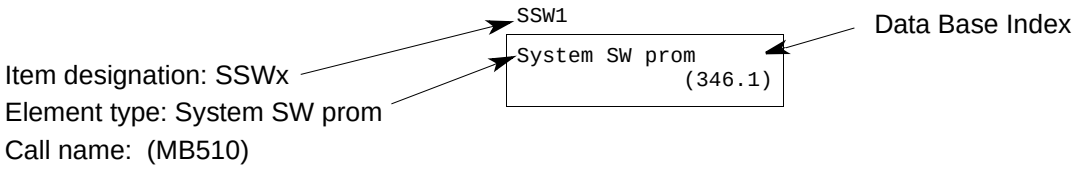
The data base element System SW prom represents the hardware MB510.

MB510 is a connector for a system software program card.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	SSWx	–	Unique **NAME** of the element.	–
3	BUS	predef	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
4	STATION	predef	0	–	**STATION**. Part of Address.	
5	POSITION	system	0	–	**POSITION**. Part of Address.	
6	SUBPOS	system	0	–	**SUBPOS**ition number.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
7	TYPE	predef	MB510	–	**TYPE** designation of the hardware module.	–
18	SW1		–	–		Not used.
:	:	:	:	:	:	:
25	SW8		–	–		Not used.
16	WARNING	system	0	B(r)	**WARNING** flag indicating non-fatal errors.	–
17	ERR	system	0	B(r)	**ERR**or flag indicating hardware or configuration error.	–
9	ERRTYPE	system	H'0	I(r)	**ERR**or **TYPE**.	See Error handling.
10	IMPL	system	0	–	0=the module is spare 1=the module is **IMPL**emented	–

Function

You can not modify any terminal of the data base element MB510.

The main function of the element is to indicate where in the subrack the hardware MB510 is placed.

Error handling

WARNING Warning.

ERR Error.

ERRTYPE Error type.

Bit pattern, default B 0000 0000 0000 0000.

Bit 0 is at the right-hand side.

Bit 15 is at the left-hand side.

Bits 0-7, supervision of program card:

ERRTYPE	Error
0-1	*Not used*
2	Not original card
3	Checksum error
4	Card missing
5	Supervision not active
6	Initial check in progress
7	*Not used*

Bits 8-15:

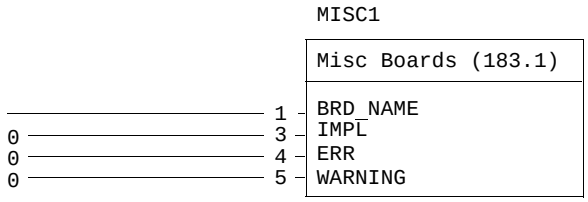
ERRTYPE	Error
8-15	*Not used*

Misc Boards MISC

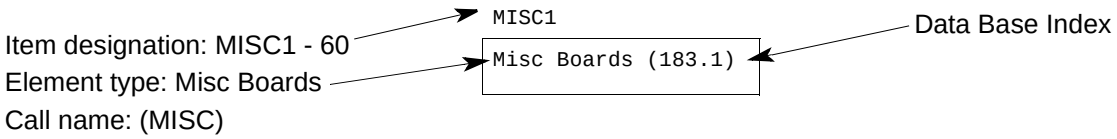
Summary

The data values of the Misc Boards data base element are presented on a system status display in Advant Station 500 Series Operator Station.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	BRD_NAME	system	NOT USED	A8(r)	**B**oa**RD NAME** to be presented in a system status picture in Advant Station 500 Series Operator Station.	Max. 8 characters.
3	IMPL	system	0	B(r)	**IMPL**emented determines if the information is to be displayed in Advant Station 500 Series Operator Station.	Board status is displayed only if IMPL=1.
4	ERR	system	0	B(r/w)	**ERR**or flag indicates non-functional board.	ERR=1 is presented as a red square in the system status picture of the Operator Station.
5	WARNING	system	0	B(r/w)	**WARNING** flag indicates non-functional unit(s) controlled from the board.	WARNING=1 is presented as a square with a red boarder in the system status picture of the Operator Station.

Function

The element is an interface to the system status function of the Advant Station 500 Series Operator Station. All MISC elements from 1 to 60 are fixed and do not require any dimensioning by DIMDB.

MISC1 to MISC48 are used by the boards DSDP 140A, DSDP 150, DSDP 170, DSDC 111, DSXW 110 and DSXW 111. The numeral n in the MISCn correspond to the address strapping (I/O address 192 - 239) of such a board.

The elements MISC49 to MISC60 are used by the boards DSCA 160, DSPU 140 and DSHC 110. In this case the numeral n in the MISCn has a complex correspondence to the board strappings.

The previous specified boards have corresponding PC elements updating the terminals of adherent MISCn element automatically.

The elements (from MISC1 to MISC48) that are not occupied can be freely used for other functions. This can be accomplished by updating BRB_NAME and IMPL using the MDB command. Connect the PC element, defining the state to be presented on the system status picture, to the ERR or WARNING terminal.

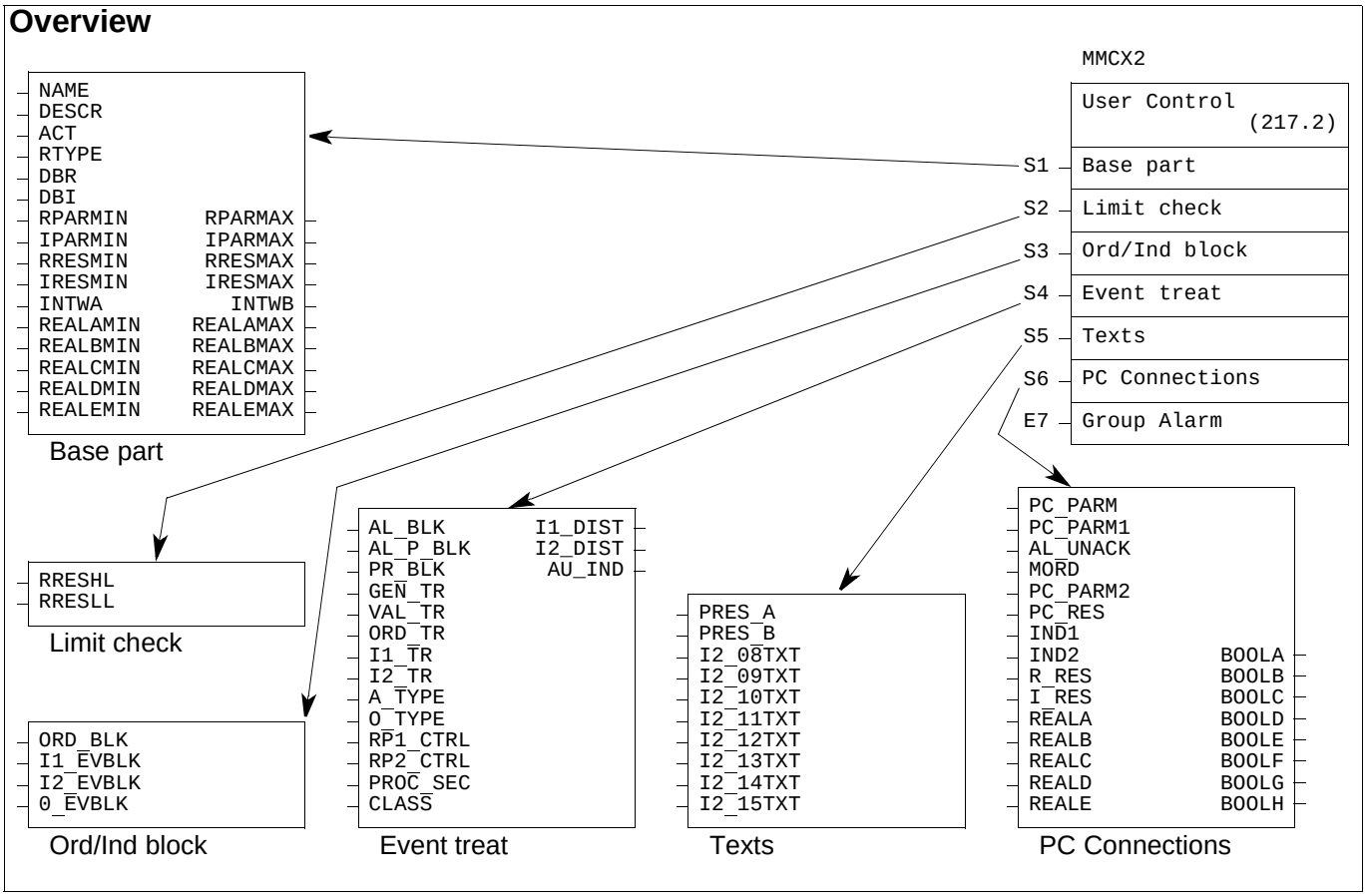
User Control MMCX

Summary

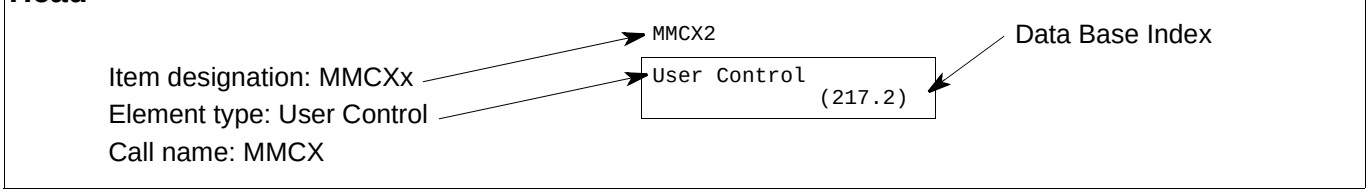
The User Control data base element is used to build Advant Station 500 Series Operator Station functions for functional units. Some static information is given. For information about the extension parts of Group Alarm see data base element Group Member.

Parameters that can be changed from the dialog can be given start values.

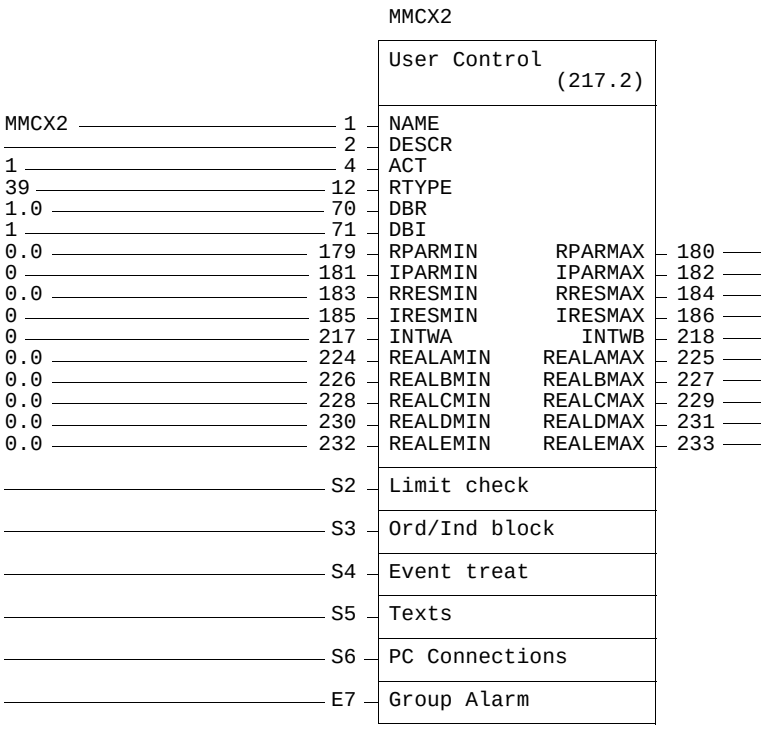
Overview



Head



Base part



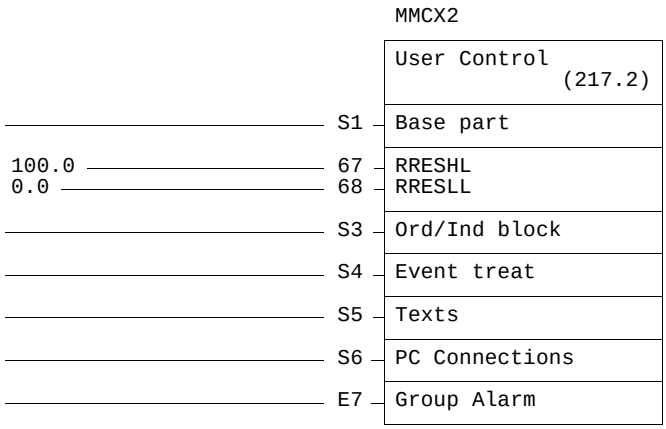
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	MMCXx	–	Each object must be given a unique **NAME**. For example ABC 123.	Max. 20 characters. Spaces are not allowed.
2	DESCR	user	–	–	**DESCR**iption of the object that is shown in Operator Station.	Max. 20 characters. Any information regarding the object may be entered.
4	ACT	user	1	B(r/w)	1=operator communication is **ACT**ive.	0=communication is blocked and events are not updated.
12	RTYPE	user	39	–	**R**eference **TYPE** for GROUP.	RTYPE Functional Unit 16 MOTCONI 39 GROUP 42 DRICONS 49 DRICONE 32-38 Free for use.

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
70	DBR	user	1.0	R(r/w)	Delta **R**eal determines the size of the change in value of REAL RES that gives event controlled updating of the picture.	–
71	DBI	user	1	IL(r/w)	Delta **I**ntl determines the size of the change in value of INTL RES that gives event controlled updating of the picture.	–
179	RPARMIN	user	0.0	R(r/w)	**R**eal **PAR**ameter **MIN**imum. Minimum value of REAL PARAM.	–
180	RPARMAX	user	100.0	R(r/w)	**R**eal **PAR**ameter **MAX**imum. Maximum value of REAL PARAM.	–
181	IPARMIN	user	0	IL(r/w)	**I**ntl **PAR**ameter **MIN**imum. Minimum value of INTL PARAM.	–
182	IPARMAX	user	100	IL(r/w)	**I**ntl **PAR**ameter **MAX**imum. Maximum value of INTL PARAM.	–
183	RRESMIN	user	0.0	R(r/w)	**R**eal **RES MIN**imum. Minimum value of REAL RES.	–
184	RRESMAX	user	100.0	R(r/w)	**R**eal **RES MAX**imum. Maximum value of REAL RES.	–
185	IRESMIN	user	0	IL(r/w)	**I**ntl **RES MIN**imum. Minimum value of INTL RES.	–
186	IRESMAX	user	100	IL(r/w)	**I**ntl **RES MAX**imum. Maximum value of INTL RES.	–
217	INTWA	user	0	I(r/w)	**INT**eger **W**ord **A**. Integer word to be used by PC program.	–
218	INTWB	user	0	I(r/w)	**INT**eger **W**ord **B**. Integer word to be used by PC program.	–
224	REALAMIN	user	0.0	R(r)	**MIN**imum value of **REAL A**.	–
225	REALAMAX	user	100.0	R(r)	**MAX**imum value of **REAL A**.	–
226	REALBMIN	user	0.0	R(r)	**MIN**imum value of **REAL B**.	–
227	REALBMAX	user	100.0	R(r)	**MAX**imum value of **REAL B**.	–
228	REALCMIN	user	0.0	R(r)	**MIN**imum value of **REAL C**.	–
229	REALCMAX	user	100.0	R(r)	**MAX**imum value of **REAL C**.	–
230	REALDMIN	user	0.0	R(r)	**MIN**imum value of **REAL D**.	–
231	REALDMAX	user	100.0	R(r)	**MAX**imum value of **REAL D**.	–
232	REALEMIN	user	0.0	R(r)	**MIN**imum value of **REAL E**.	–
233	REALEMAX	user	100.0	R(r)	**MAX**imum value of **REAL E**.	–

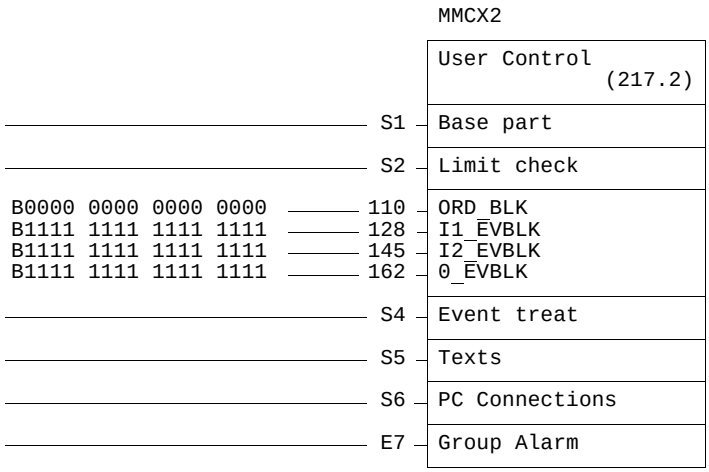
Limit check



Terminal Description, Limit check

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
67	RRESHL	user	100.0	R(r/w)	**R**eal **RES H**igh **L**imit. Highest limit used by PC for limit check of the real value REAL RES.	–
68	RRSLL	user	0.0	R(r/w)	**R**eal **RES L**ow **L**imit. Lowest limit used by PC for limit check of the real value REAL RES.	–

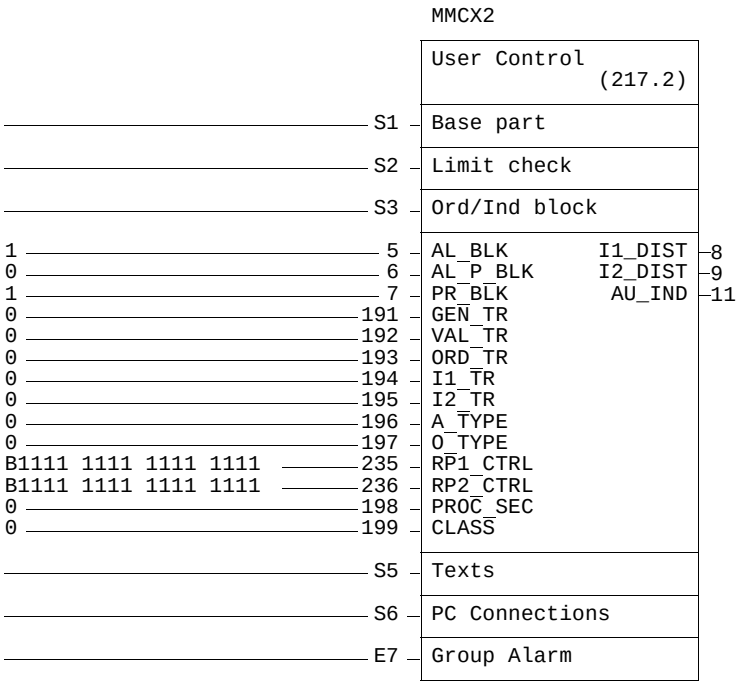
Ord/Ind block



Terminal Description, Ord/Ind block

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
110	ORD_BLK	user	H'0000	I(r/w)	**BL**oc**K**ing of manual **ORD**ers. New value can be entered as a hexadecimal string, e.g. H'000, or as a binary string, e.g. B0000 0000 0000 0000.	–
128	I1_EVBLK	user	H'FFFF	I(r/w)	**BL**oc**K**ing of **I**ndication **EV**ents **1**. New value can be entered as a hexadecimal string, e.g. H'0000, or as a binary string, e.g. B0000 0000 0000 0000.	–
145	I2_EVBLK	user	H'FFFF	I(r/w)	**BL**oc**K**ing of **I**ndication **EV**ents **2**. New value can be entered as a hexadecimal string, e.g. H'0000, or as a binary string, e.g. B0000 0000 0000 0000.	–
162	O_EVBLK	user	H'FFFF	–	**BL**oc**K**ing of **EV**ents at manual **O**rders. New value can be entered as a hexadecimal string, e.g. H'0000, or as a binary string, e.g. B0000 0000 0000 0000.	–

Event treat



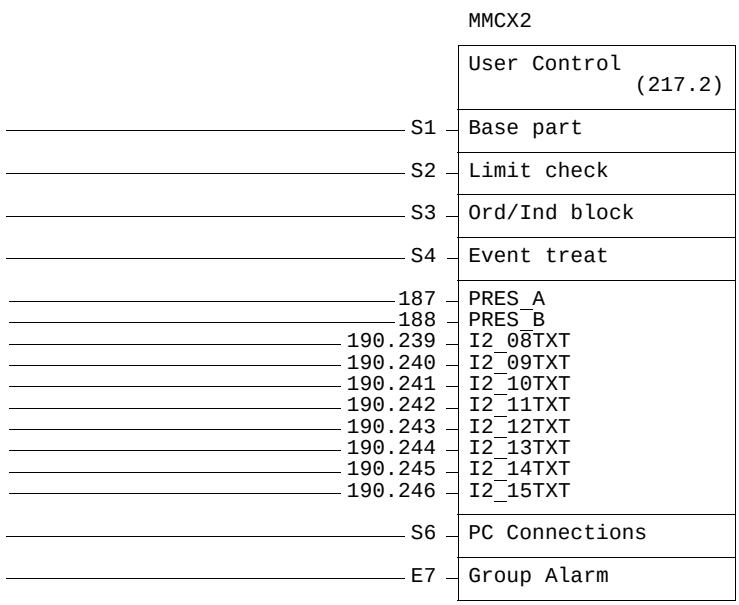
Terminal Description, Event treat

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
5	AL_BLK	dialog	1	–	**BL**ocKing of **AL**arms to alarm list.	–
6	AL_P_BLK	system	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K** flag for temporary blocking of alarm indication and event handling in Operator Station by PC program.	–
7	PR_BLK	dialog	1	–	**BL**oc**K**ing of alarms to **PR**inter and other units.	–
191	GEN_TR	user	0	–	The **GEN**eral **TR**eatment terminal assigns item numbers for event handling of ALARM BLocK orders and PRINT BLocK orders.	–
192	VAL_TR	user	0	–	**VAL**ue **TR**eatment. Item numbers for event treatment of REAL PARAM orders, INTL PARAM orders, REAL RES LOLIM orders and REAL RES HILIM orders.	–
193	ORD_TR	user	0	–	The manual **ORD**er **TR**eatment terminal assigns item numbers for event handling of manual orders MORD_00 … MORD_15.	–

Terminal Description, Event treat (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
194	I1_TR	user	0	–	The **I**ndication **TR**eatment of IND**1** specifies which EVENT TREAT data base element is to be used in the Operator Station.	–
195	I2_TR	user	0	–	The **I**ndication **TR**eatment of IND**2** specifies which EVENT TREAT data base element is to be used in the Operator Station.	–
196	A_TYPE	user	0	–	**A**nalyze **TYPE**. 0=Error handling of IND1 and IND2 in Operator Station 1=No error handling of IND1 or IND2 except for IND1_08.	–
197	O_TYPE	user	0	–	**O**rder **TYPE**.	Always set to 0.
235	RP1_CTRL	user	H'FFFF	–	Every bit of the value **R**e**P**eat **C**on**TR**o**L 1** blocks error in the corresponding bit of the IND1. New value can be entered as a hexadecimal string, e.g. H'0000, or as a binary string, e.g. B0000 0000 0000 0000.	–
236	RP2_CTRL	user	H'FFFF	–	Every bit of the value **R**e**P**eat **C**on**TR**o**L 2** blocks error in the corresponding bit of the IND2. New value can be entered as a hexadecimal string, e.g. H'0000, or as a binary string, e.g. B0000 0000 0000 0000.	–
198	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16. 0=no sectioning. The signal may be presented in lists –1=the signal can't be selected and can't be presented in lists.	–
199	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
8	I1_DIST	System	-	B(r)	**I**nd**1 DIST**urbance. Some of indications IND1.00 to IND1.15 is in disturbance state.	–
9	I2_DIST	System	-	B(r)	**I**nd**2 DIST**urbance. Some of indications IND1.00 to IND1.15 is in disturbance state.	–
11	AU_IND	System	-	B(r)	**A**larm is **U**nacknowledged for at least one **IND**ication.	–

Texts



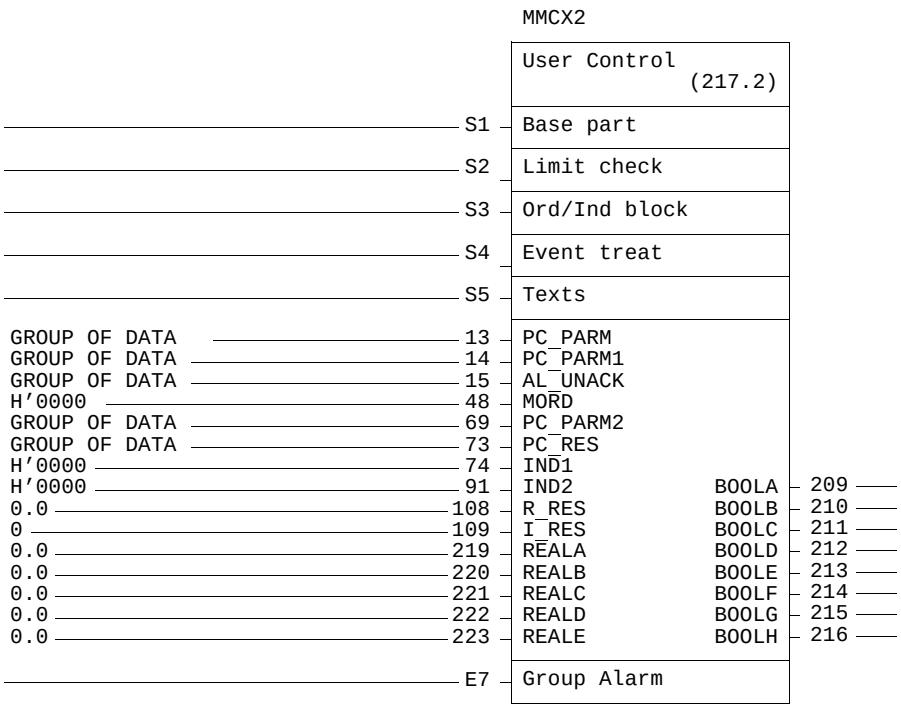
Terminal Description, Texts

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
187	PRES_A	user	–	–	**PRES A**. Freely usable text.	Max. 10 characters.
188	PRES_B	user	–	–	**PRES B**. Freely usable text.	Max. 10 characters.
190.239	I2_08TXT	user	–	–	**I**nd**2 08** pres **T**e**XT**. Text attached to IND2 08.	Highest priority. Max. 17 characters.
190.240	I2_09TXT	user	–	–	**I**nd**2 09** pres **T**e**XT**. Text attached to IND2 09.	Max. 17 characters.
190.241	I2_10TXT	user	–	–	**I**nd**2 10** pres **T**e**XT**. Text attached to IND2 10.	Max. 17 characters.
190.242	I2_11TXT	user	–	–	**I**nd**2 11** pres **T**e**XT**. Text attached to IND2 11.	Max. 17 characters.
190.243	I2_12TXT	user	–	–	**I**nd**2 12** pres **T**e**XT**. Text attached to IND2 12.	Max. 17 characters.
190.244	I2_13TXT	user	–	–	**I**nd**2 13** pres **T**e**XT**. Text attached to IND2 13.	Max. 17 characters.
190.245	I2_14TXT	user	–	–	**I**nd**2 14** pres **T**e**XT**. Text attached to IND2 14.	Max. 17 characters.

Terminal Description, Texts (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
190.246	I2_15TXT	user	–	–	**I**nd**2 15** pres **T**e**XT**. Text attached to IND2 15.	Lowest priority. Max. 17 characters.

PC Connections


MMCX2
User Control (217.2)
S1 Base part
S2 Limit check
S3 Ord/Ind block
S4 Event treat
S5 Texts
GROUP OF DATA 13 PC_PARM
GROUP OF DATA 14 PC_PARM1
GROUP OF DATA 15 AL_UNACK
H'0000 48 MORD
GROUP OF DATA 69 PC_PARM2
GROUP OF DATA 73 PC_RES
H'0000 74 IND1
H'0000 91 IND2 BOOLA 209
0.0 108 R_RES BOOLB 210
0 109 I_RES BOOLC 211
0.0 219 REALA BOOLD 212
0.0 220 REALB BOOLE 213
0.0 221 REALC BOOLF 214
0.0 222 REALD BOOLG 215
0.0 223 REALE BOOLH 216
E7 Group Alarm

Terminal Description, PC Connections

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
13	PC_PARM	system	–	A32(r/w)	The **PC PAR**a**M**eters terminal contains group data to be connected to the PARAM terminals of the VALVECON and MOTCON PC elements.	–
14	PC_PARM1	system	–	A24(r/w)	Group data to be connected to the **PCPAR1** terminal of the MMC-ORD PC element.	–

Terminal Description, PC Connections (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
15	AL_UNACK	system	–	IL(r/w)	Group data over **UNACK**nowledged **AL**arms.	–
48	MORD	dialog and PC	–	I(r/w)	Group data for **M**anual **ORD**ers from the operator. Used for acknowledge from PC.	–
69	PC_PARM2	system	–	A10(r/w)	Group data to be connected to the **PCPAR2** terminal of the MMC-IND PC element.	–
73	PC_RES	PC	–	A12(r/w)	The **PC RES**ult terminal contains group data to be connected from the RESULT terminal of the VALVECON and MOTCON PC elements and to MMC-IND terminal PCRES.	–
74	IND1	system	–	I(r/w)	The **IND**ication **1** terminal contains status indications from PC.	–
91	IND2	system	–	I(r/w)	The **IND**ication **2** terminal contains status indications from PC.	–
108	R_RES	system	–	R(r/w)	**R**eal **RES**ult from PC.	–
109	I_RES	system	–	IL(r/w)	Long **I**nteger **RES**ult from PC.	–
219	REALA	PC	0.0	R(r/w)	**REAL A**. Extra real values to be used for presentation by PC program.	–
220	REALB	PC	0.0	R(r/w)	**REAL B**. Extra real values to be used for presentation by PC program.	–
221	REALC	PC	0.0	R(r/w)	**REAL C**. Extra real values to be used for presentation by PC program.	–
222	REALD	PC	0.0	R(r/w)	**REAL D**. Extra real values to be used for presentation by PC program.	–
223	REALE	PC	0.0	R(r/w)	**REAL E**. Extra real values to be used for presentation by PC program.	–
209	BOOLA	PC	0	B(r/w)	**BOOL**ean **A**. Extra free flags to be used by PC program.	–
210	BOOLB	PC	0	B(r/w)	**BOOL**ean **B**. Extra free flags to be used by PC program.	–
211	BOOLC	PC	0	B(r/w)	**BOOL**ean **C**. Extra free flags to be used by PC program.	–
212	BOOLD	PC	0	B(r/w)	**BOOL**ean **D**. Extra free flags to be used by PC program.	–
213	BOOLE	PC	0	B(r/w)	**BOOL**ean **E**. Extra free flags to be used by PC program.	–

Terminal Description, PC Connections (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
214	BOOLF	PC	0	B(r/w)	**BOOL**ean **F**. Extra free flags to be used by PC program.	–
215	BOOLG	PC	0	B(r/w)	**BOOL**ean **G**. Extra free flags to be used by PC program.	–
216	BOOLH	PC	0	B(r/w)	**BOOL**ean **H**. Extra free flags to be used by PC program.	–

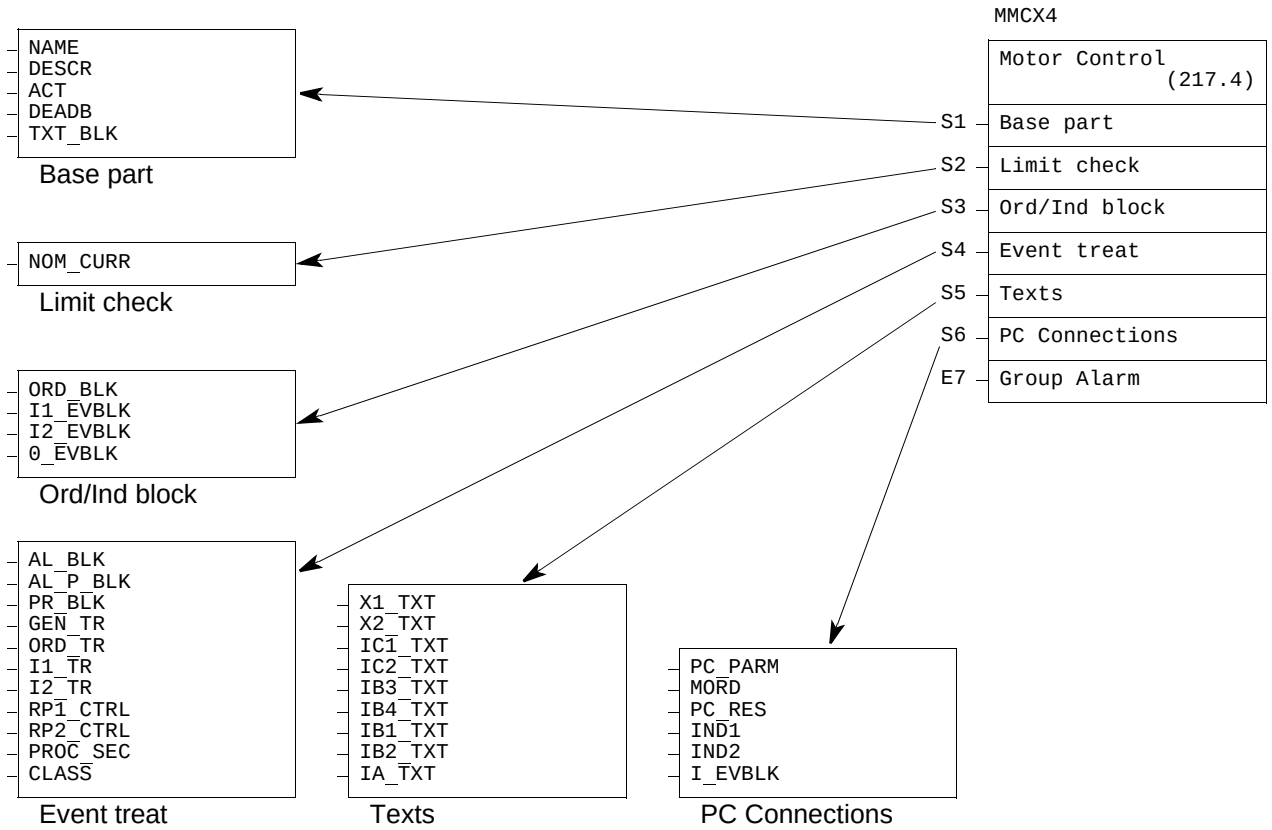
Motor Control MOTCON

Summary

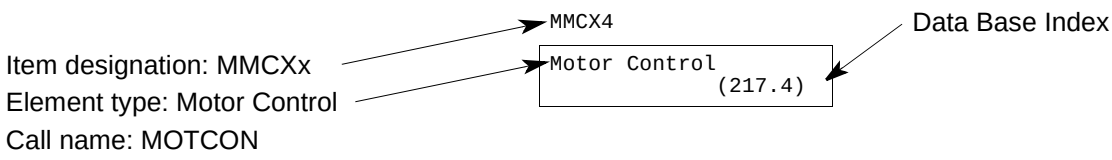
The Motor Control data base element is used to build Advant Station 500 Series Operator Station functions for the MOTCON function unit. Some static information is given. For information about the extension parts of Group Alarm see data base element Group Member.

Parameters that can be changed from the dialog can be given start values.

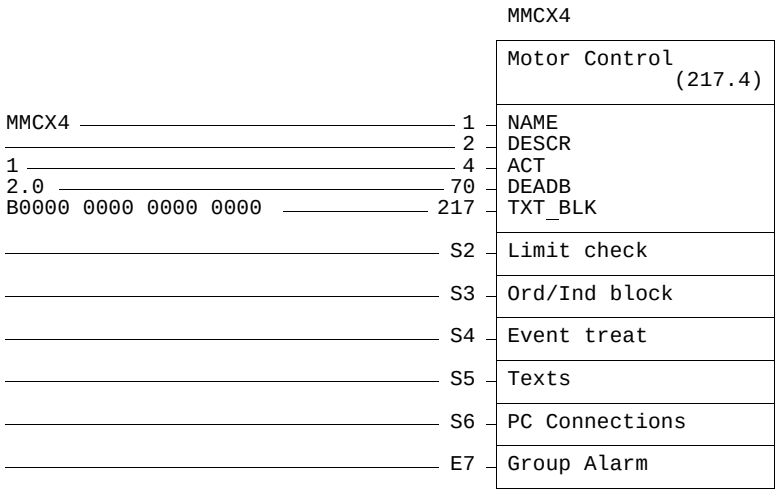
Overview



Head



Base part



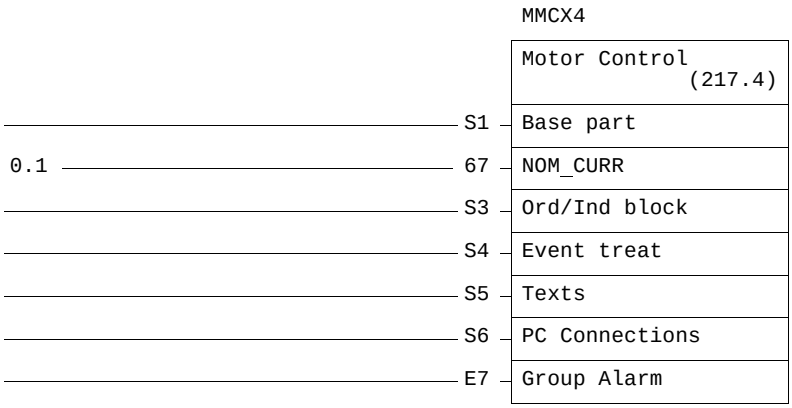
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	MMCXx	–	Each object must be given a unique **NAME**. E.g. ABC 123.	Max. 20 characters. Spaces are not allowed.
2	DESCR	user	–	–	**DESCR**iption of the object that is shown in Operator Station.	Max. 20 characters. Any information regarding the object may be entered.
4	ACT	user	1	B(r/w)	1=operator communication is **ACT**ive.	0=dialog is blocked and events are not updated.
70	DEADB	user	2.0	–	**DEADB**and limit percentage. If change in current exceeds the limit, the value will be updated.	–

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
217	TXT_BLK	user	H'0	I(r/w)	**TeXT BLocK** is used to remove unused fixed error texts from the object picture. All available texts are represented by a flag in TXT_BLK. A set flag indicates a blocked text. The default value have no set flags. The TXT_BLK table shows how to compute the TXT_BLK value. New values can be entered as hexadecimal string, e.g. H'0000 or as a binary string, e.g. B0000 0000 0000 0000.	Text	Bit value	Def. Hex. value
						Control voltage	1	0
						Bimetal relay	2	
						Local stop	4	
						Safety Monitor	8	
						Not used	1	0
						Monitor high	2	
						Monitor low	4	
						Not used	8	
						Not used	1	0
						Not used	2	
						Not used	4	
						Not used	8	
						Not used	1	0
						Not used	2	
						Not used	4	
						Not used	8	

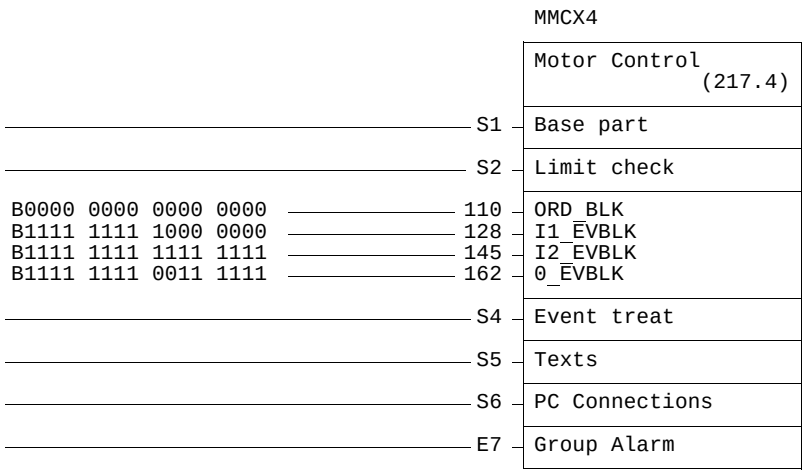
Limit check



Terminal Description, Limit check

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
67	NOM_CURR	user	0.1	R(r)	The **NOM**inal **CURR**ent of the motor expressed in amperes. This value is used for limit check of motor current. It is also used for scaling of motor current in which case it equals 100%.	One decimal only will be displayed in Operator Station. (0.1 - 9999.9).

Ord/Ind block



Terminal Description, Ord/Ind block

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
110	ORD_BLK	user	H'0000	I(r/w)	**BL**oc**K**ing of manual **ORD**ers. All available orders are represented by a flag in ORD_BLK. A set flag indicates a blocked order. The default value contains no set flags. The ORD_BLK table shows how to compute the ORD_BLK value. New value can be entered as a hexadecimal string, e.g. H'0000, or as a binary string, e.g. B0000 0000 0000 0000.	Text	Bit value	Def. Hex. value
						Local	1	0
						Test	2	
						Standby	4	
						Central	8	
						Auto	1	0
						Man	2	
						Blocking of interlocks IB1 and IB3	4	
						Deblocking of interlocks	8	
						Forw./high	1	0
						Rew./low	2	
						Start order	4	
						Stop order	8	
						Y1	1	0
						Y2	2	
						Y3	4	
						Sequence	8	

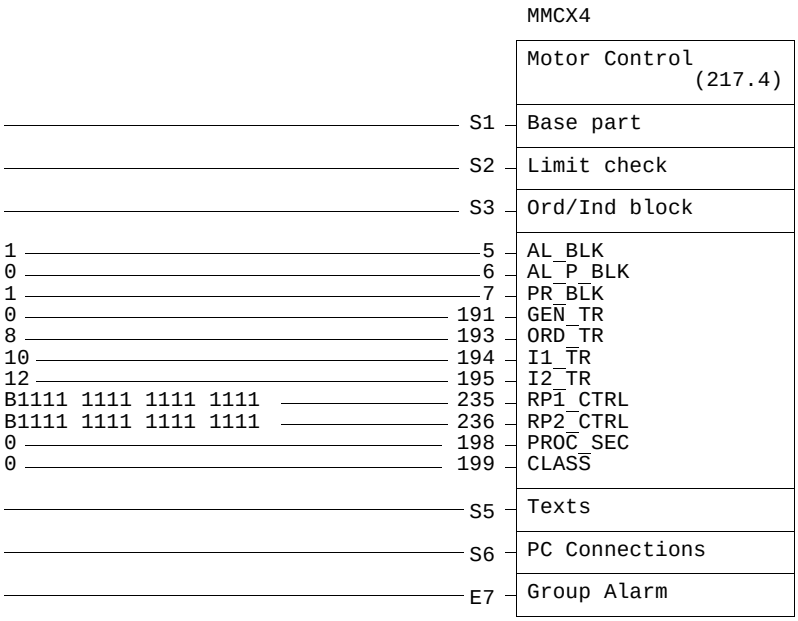
Terminal Description, Ord/Ind block (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
128	I1_EVBLK	user	H'FF80	I(r/w)	**BL**oc**K**ing of **I**ndication **EV**ents **1**. All available events are represented by a flag in I1_EVBLK. A set flag indicates a blocked event. The default value is set to block all events at indication that are not normally error indications. The I1_EVBLK table shows how to compute the I1_EVBLK value. New value can be entered as a hexadecimal string, e.g. H'F300, or as a binary string, e.g. B1111 0011 0000 0000.	Text	Bit value	Def. Hex. value
						Control voltage	1	0
						Bimetal relay	2	
						Local stop	4	
						Safety Monitor	8	
						Contactor	1	8
						Monitor high	2	
						Monitor low	4	
						X1 external indication/ alarm	8	
						Always 1	1	F
						Always 1	2	
						High motor current	4	
						X2 external indication/ alarm	8	
						Always 1	1	F
						Always 1	2	
						Always 1	4	
						Always 1	8	

Terminal Description, Ord/Ind block (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
145	I2_EVBLK	user	H'FFFF	I(r/w)	**L**oc**K**ing of **I**ndication **EV**ents **2**. All available events at indication are represented by flag in I2_EVBLK. A set flag indicates a blocked event. The default value is set to block all events. The I2_EVBLK table shows how to compute the I2_EVBLK value. New value can be entered as a hexadecimal string, e.g. H'80C1, or as a binary string, e.g. B1000 0000 1100 0001.	Text	Bit value	Def. Hex. value
						Always 1	1	F
						Local	2	
						Test	4	
						Standby	8	
						Sequence	1	F
						Auto/Manual	2	
						Always 1	4	
						Always 1	8	
						Active interlock IC1	1	F
						Active interlock IC2	2	
						Active interlock IB3	4	
						Active interlock IB4	8	
						Active interlock IB1	1	F
						Active interlock IB2	2	
						Active interlock IA	4	
						Always 1	8	
162	O_EVBLK	user	H'FF3F	–	**BL**oc**K**ing of manual **O**rders **EV**ents. All available events are represented by a flag in O_EVBLK. A set flag indicates a blocked event. The default value is set to block all events except interlock blocking. The O_EVBLK value is computed in the same way as the ORD_BLK value and uses the same table. New values can be entered as a hexadecimal string, e.g. H'0000, or as a binary string, e.g. B0000 0000 0000 0000.	The function is not implemented in Operator Station.		

Event treat



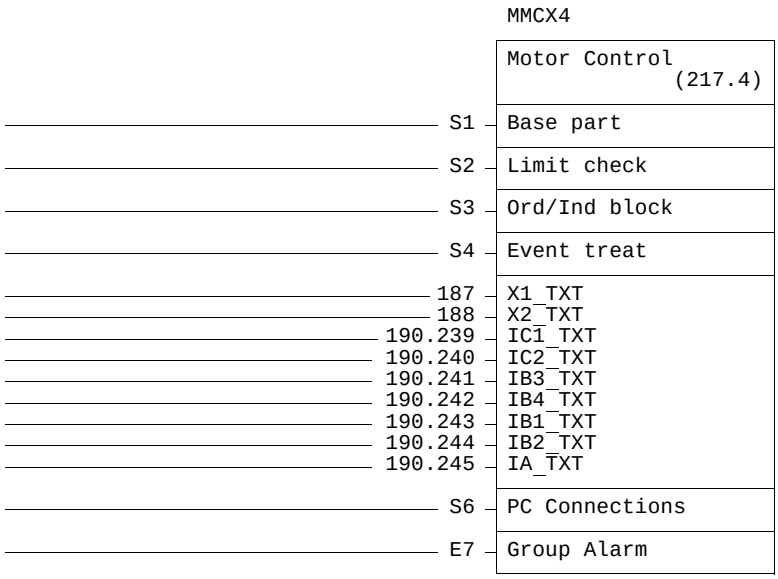
Terminal Description, Event treat

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
5	AL_BLK	dialog	1	–	Flag for **BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
6	AL_P_BLK	system	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K** flag for temporary blocking of alarm indication and event handling in Operator Station by PC program.	–
7	PR_BLK	dialog	1	–	Flag for **BL**oc**K**ing of **PR**intout in Operator Station.	–
191	GEN_TR	user	0	–	The **GEN**eral **TR**eatment terminal assigns item numbers for event handling of ALARM BLocK orders and PRINT BLocK orders.	Function not implemented in Operator Station.
193	ORD_TR	user	8	–	The manual **ORD**er **TR**eatment terminal assigns item numbers for event handling of manual orders MORD_00 … MORD_15.	Function not implemented in Operator Station.

Terminal Description, Event treat (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
194	I1_TR	user	10	–	The **I**ndication **TR**eatment **1** terminal assigns terminal numbers for event handling of changes in IND1.	–
195	I2_TR	user	12	–	The **I**ndication **TR**eatment **2** terminal assigns terminal numbers for event handling of changes in IND2.	–
235	RP1_CTRL	user	H'FFFF	–	Every bit of the value **BL**oc**K**s **R**e**P**eat error in the corresponding bit of the IND1.	Uses the same bit-table as I1_EVBLK.
236	RP2_CTRL	user	H'FFFF	–	Every bit of the value **BL**oc**K**s **R**e**P**eat error in the corresponding bit of the IND2.	Uses the same bit-table as I2_EVBLK.
198	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
199	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–

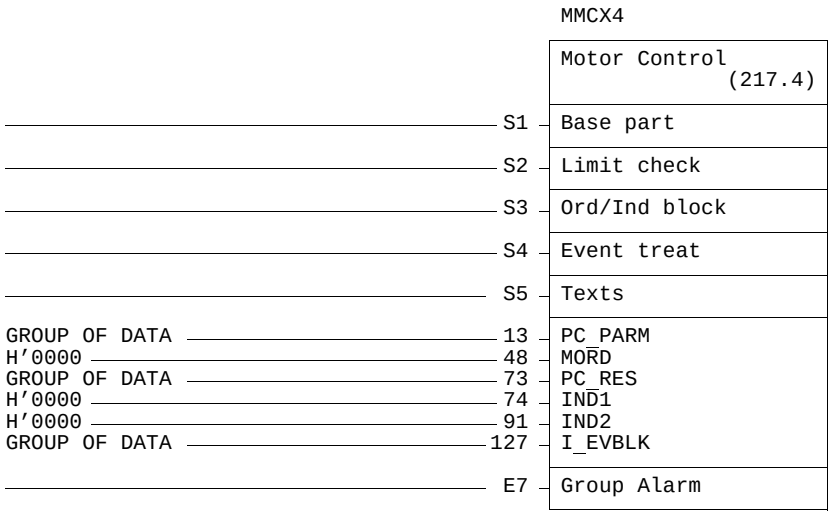
Texts



Terminal Description, Texts

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
187	X1_TXT	user	–	–	**X1 TeXT**. Text to be presented if the PC input X1=TRUE.	Max. 10 characters.
188	X2_TXT	user	–	–	**X2 TeXT**. Text to be presented if the PC input X2=TRUE.	Max. 10 characters.
190.239	IC1_TXT	user	–	–	**TeXT** to be presented when the **IC1** input of the PC element is FALSE.	Highest priority. Max. 17 characters.
190.240	IC2_TXT	user	–	–	**TeXT** to be presented when the **IC2** input of the PC element is FALSE.	Max. 17 characters.
190.241	IB3_TXT	user	–	–	**TeXT** to be presented when the **IB3** input of the PC element is FALSE.	Max. 17 characters.
190.242	IB4_TXT	user	–	–	**TeXT** to be presented when the **IB4** input of the PC element is FALSE.	Max. 17 characters.
190.243	IB1_TXT	user	–	–	**TeXT** to be presented when the **IB1** input of the PC element is FALSE.	Max. 17 characters.
190.244	IB2_TXT	user	–	–	**TeXT** to be presented when the **IB2** input of the PC element is FALSE.	Max. 17 characters.
190.245	IA_TXT	user	–	–	**TeXT** to be presented when the **IA** input of the PC element is FALSE.	Lowest priority. Max. 17 characters.

PC Connections



Terminal Description, PC Connections

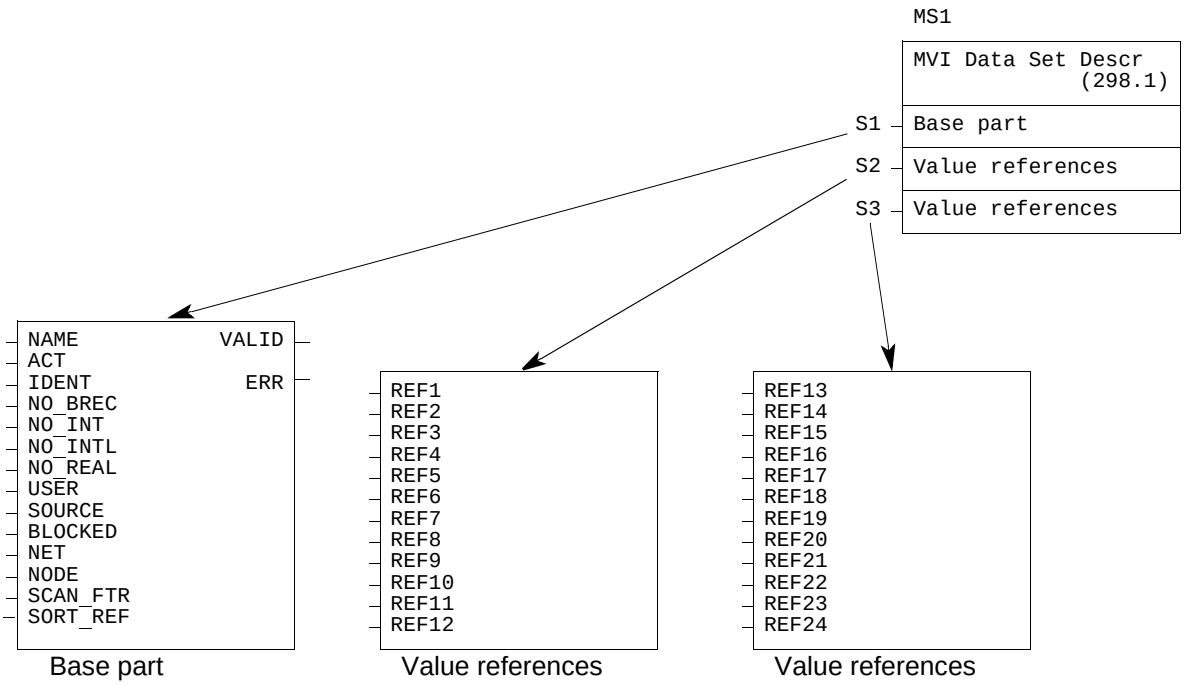
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
13	PC_PARM	system	–	A32(r/w)	The **PC PAR**a**M**eters terminal contains group data to be connected to the PARAM terminal of the MOTCON PC element.	–
48	MORD	dialog/PC	–	I(r/w)	Group data for **M**anual **ORD**ers from the operator. Connected to the RMORD terminal of the MOTCON PC element.	–
73	PC_RES	PC	–	A12(r/w)	The **PC RES**ult terminal contains group data to be connected from the RESULT terminal of the MOTCON PC element.	–
74	IND1	PC via PC_RES	–	I(r/w)	The **IND**ication **1** terminal contains status indications received via PC_RES from PC.	–
91	IND2	PC via PC_RES	–	I(r/w)	The **IND**ication **2** terminal contains status indications received via PC_RES from PC.	–
127	I_EVBLK	PC	–	IL(r/w)	**BL**oc**K**ing of **EV**ent **I**ndication.	–

MVI Data Set Descr MS

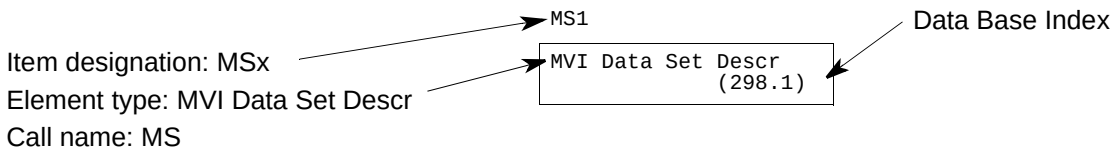
Summary

The data values of the MVI Data Set Descr data base element define a block of data to be received or transmitted over MasterNet via MVI Data Set Communication. With the element you select address, mode and data for one data set. The element defines the set, and contains references to separate DAT data base elements. In these DAT elements the data to be transmitted or received, is stored.

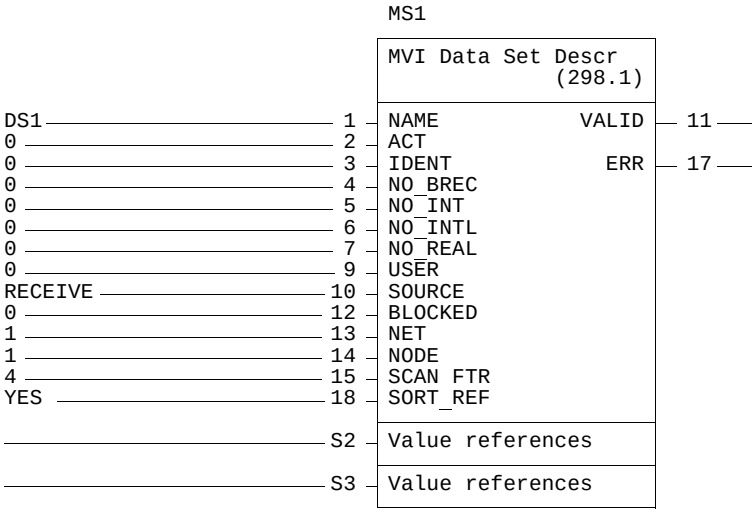
Overview



Head



Base part



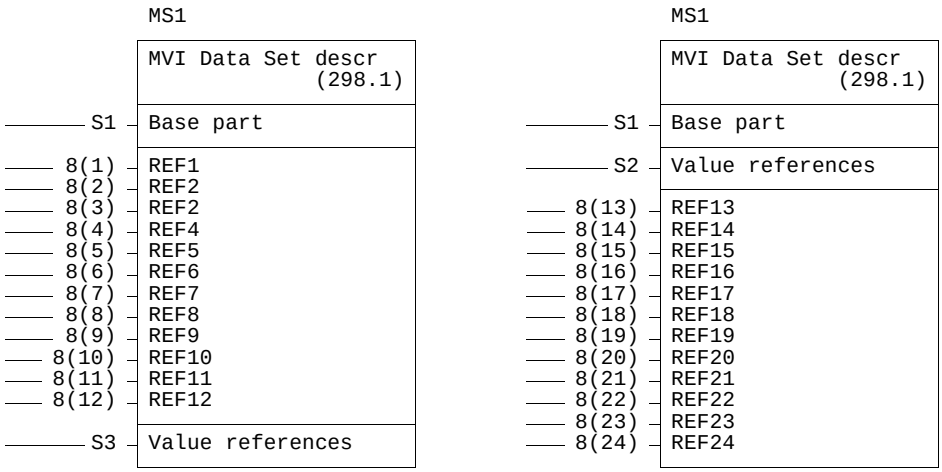
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	0	A12(r/w)	Each MVI Data Set Descr must have a unique **NAME**.	Maximum 7 characters.
2	ACT	user	0	B(r/w)	1=the element is **ACT**ivated. 0=the element is spare.	For ACT=0, data cannot be accessed.
3	IDENT	user	0	–	**IDENT**ifies the data set in the node. Allowed values: 1 - 255	For MVI data set communication the terminals SOURCE and IDENT must have a unique combination. For ACT=1. IDENT=0 is not allowed.
4	NO_BREC	user	0	–	The **N**umber of **B**oolean **REC**ords in the set. 0 - 24.	The total number of records (NO_xxx) in the set is limited to 24.
5	NO_INT	user	0	–	The **N**umber of **INT**eger records in the set. 0 - 24.	The total number of records (NO_xxx) in the set is limited to 24.
6	NO_INTL	user	0	–	The **N**umber of **INT**eger **L**ong records in the set. 0 - 24.	The total number of records (NO_xxx) in the set is limited to 24.
7	NO_REAL	user	0	–	The **N**umber of **REAL** records in the set. 0 - 24.	The total number of records (NO_xxx) in the set is limited to 24.

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
9	USER	user	3	–	**USER**. 3=MVI Data Set Communication.	–
10	SOURCE	user	RECEIVE	–	**SOURCE**. Defines the direction of the communication. R=RECEIVE, S=SEND.	–
12	BLOCKED	user, PC	0	B(r/w)	1=transmission or reception **BLOCKED** by PC, for example.	–
13	NET	user	1	–	**NET** number of opposite node. 01-09, 11-19, 21-29, .. , 91-99.	If SOURCE=Send: destination net. If SOURCE=Receive: transmitting net.
14	NODE	user	1	–	**NODE** number of opposite node is 1-127 for MVI Data Set Communication. (see manual for board CI532 Vxx)	If SOURCE=Send: destination net. If SOURCE=Receive: transmitting net.
15	SCAN_FTR	user	–	–	Transmission interval, 1..127 in steps of the MVI_DSC value=2 s, unless changed by the APP command.	Transmitting and receiving MS elements should have the same value.
18	SORT_REF	user	YES	–	**SORT REF**erences. 0=NO, 1=YES	If Yes then all DAT refs are sorted in the following order: DAT(B), DAT(I), DAT(IL), DAT(R)
11	VALID	system	–	B(r/w)	**VALID**. 1=data has been updated. 0=data has not been received within 3*SCAN_FTR. 1=data has been sent 0=data has not been sent	Receiving MVI Data Set. Not used by ExCom. Sending MVI Data Set. Reset by user.
17	ERR	system	–	–	**ERR**or. 1=wrong size 0=no connection	Receiving MVI Data Set. Sending MVI Data Set.

Value references



Terminal Description, Value references

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
8(1)	REF1	user	*See Remarks*	–	**REF**erence: Name of connected DAT element (number **1**).	If you name the MVI Data Set ”FORMULA” and set NO_BREC, NO_INTL and NO_REAL to 1, then the names of the connected DAT elements will be: FORMULA.B1 FORMULA.I1 FORMULA.IL1 FORMULA.R1
8(2)	REF2	user	*See Remarks*	–	**REF**erence: Name of connected DAT element (number **2**).	
:	:	:	:	:	:	
8(24)	REF24	user	*See Remarks*	–	**REF**erence: Name of connected DAT element (number **24**).	

Creation of MVI Data Set and DAT Elements

Creation of an MVI Data Set Descr data base element implies automatic creation of needed non-referred DAT data base elements. More specifically an MVI Data Set Descr element contains NO_BREC, NO_INT, and so on terminals. Further the MVI Data Set Descr element contains REFx terminals referring by name to DAT(B), DAT(I) and so on, which must have been created previously. The MS creation then implies automatic creation of following number of DAT(B):

NO_BREC – Number of DAT(B) references

if this difference is positive or zero, otherwise:

Number of DAT(B) references.

In the latter case the NO_BREC terminal is modified to equalize the Number of DAT(B) references. The rules for the other types of DAT elements are analogous.

New MVI Data Set Descr elements may be added after system init.

Modification of an existing MVI Data Set Descr element permits addition, modification and deletion of DAT elements references. Adherent NO_BREC, NO_INT and so on will be updated automatically. Delete a DAT elements reference by a dot.

When leaving the MVI Data Set Descr element the DAT elements references is sorted in order B, I, IL, R without any empty REFx, if SORT_REF=Yes.

It is not possible to delete MVI Data Set Descr elements. These elements are inactivated by setting ACT=0. In addition it may be desirable to delete the DAT elements references. An inactive MVI Data Set Descr element may be reactivated by setting ACT=1 and by restoring the DAT elements references if these have been deleted.

Do not create more than 2 consecutive MVI Data Set Descr elements with the same scan factor and addressed to one particular destination node. The communication system may overflow and the MVI Data Sets will not be sent until the next scan interval if more than two such elements are created.

Function

Transmission control

The terminal ACT controls whether the MVI Data Set will be transmitted or not. For MVI Data Set Communication you may use the BLOCK terminal to block the data set to temporarily block transmission or to avoid change of the DAT elements.

The terminal SCAN_FTR controls the transmission interval. The terminal should have the same value for the transmitting and the receiving element. In the receiving element a time-out interval of 3×SCAN_FTR is used after which the VALID terminal is cleared to 0 if no update has occurred.

IDENT is the unique identification used by the system. It must be equal for corresponding elements in sending and receiving node, and must be unique in both nodes. MVI Data Set Communication (MVI_DSC) use positive numbers.

See the PC element SENDREQ for information about event controlled execution of the MVI Data Set.

MVI Data Set Communication transmission

When you activate an MVI Data Set Descr data base element to send its data to an Advant Station 500 Series Operator Station in MasterNet, you must make sure that:

ACT	=	1
USER	=	3
SOURCE	=	S
BLOCKED	=	0
SCAN_FTR	=	desired repeat interval of transmission
IDENT	=	a positive number 1 - 255
NET	=	Net number of receiving MVI Data Set
NODE	=	Node number of receiving MVI Data Set.

IDENT, NET, SOURCE and NODE together form a unique identity.

A corresponding MVI Data Set with the same IDENT and with the NET and NODE numbers of the transmitting MVI Data Set must exist in the receiving end, and it must be set up for reception. The DAT elements references must correspond in number and types.

MVI Data Set Communication reception

When you activate an MVI Data Set Descr data base element to receive data via MasterNet, you must make sure that:

ACT	=	1
USER	=	3
SOURCE	=	R
BLOCKED	=	0
SCAN_FTR	=	repeat interval of transmission
IDENT	=	a positive number 1 - 255
NET	=	Net number of transmitting MVI Data Set
NODE	=	Node number of transmitting MVI Data Set.

IDENT, NET, SOURCE and NODE together form a unique identity.

A corresponding MVI Data Set with the same IDENT and with the NET and NODE numbers of the transmitting MVI Data Set must exist in the transmitting end, and it must be set up for transmission.

VALID is set for the MS element and its DAT elements when proper data is received, and is reset if no data is received within the time-out of 3 times SCAN_FTR.

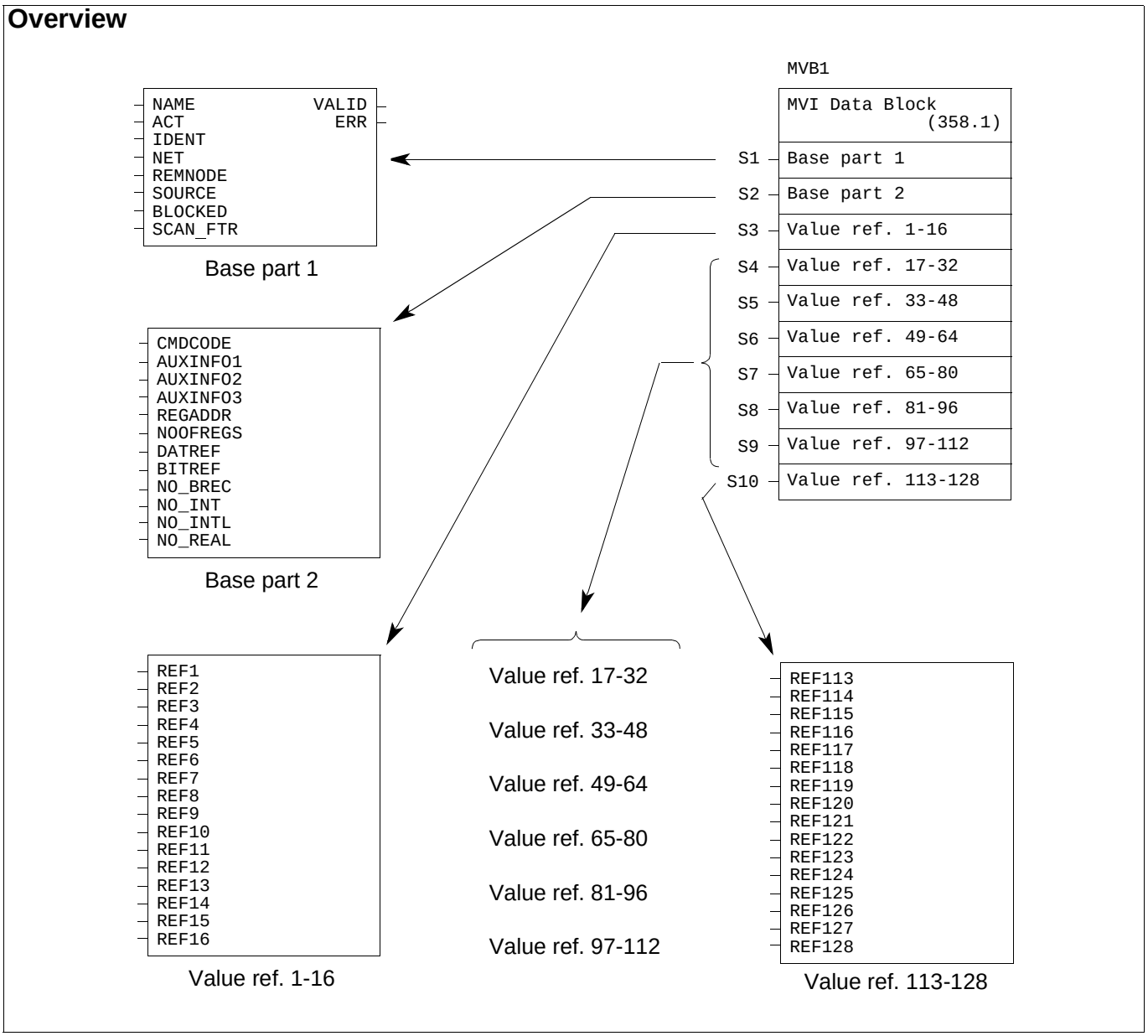
All received MVI Data Sets should be entered in the top of the MVI Data Set file with the lowest SCAN_FTR value first in order to reduce the CPU load.

MVI Data Block MVB

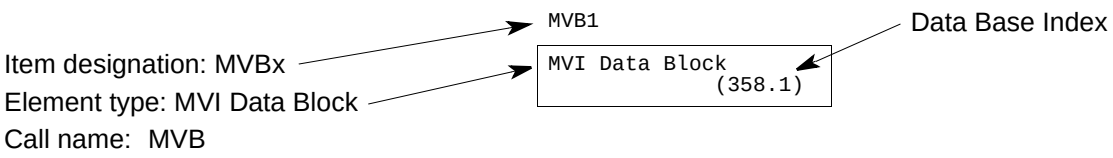
Summary

The MVI Data Block element specifies either data transmission to other MVI nodes or commands sent locally to the protocol handler on the submodule. When used for data transmission, the MVB data base element on the sending side, both specifies a command and holds the data for transmission. On the receiving side, the MVB data base element just holds the data.

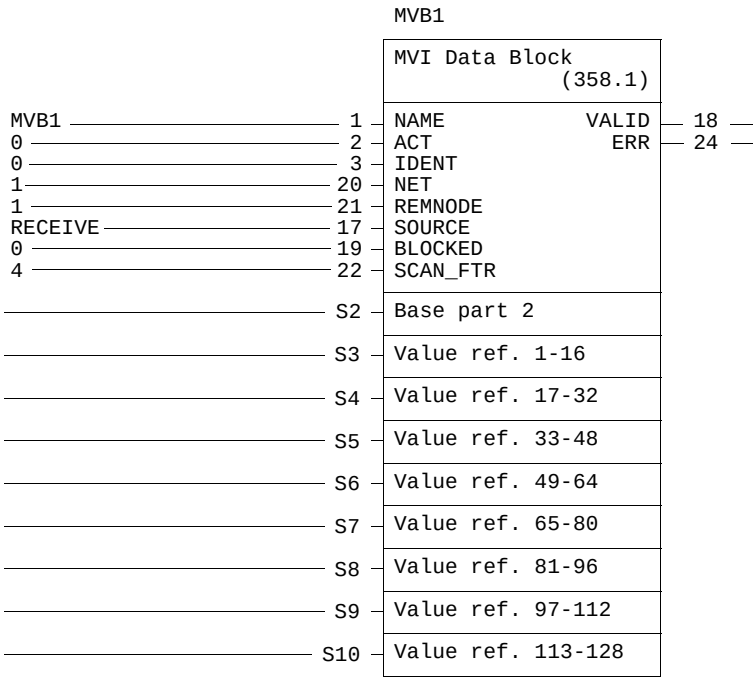
Overview



Head



Base part 1



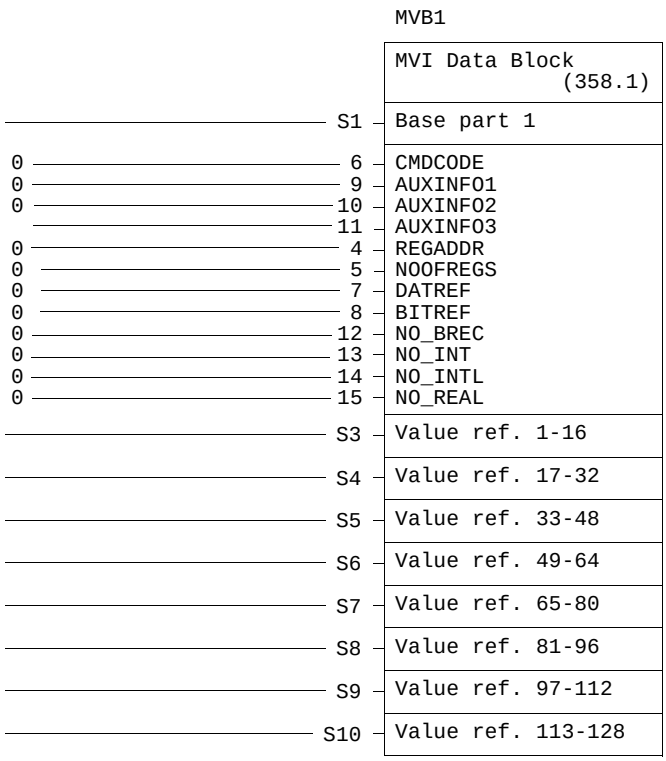
Terminal Description, Base part 1

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	MVBx	–	Unique module **NAME**.	Maximum 20 characters.
2	ACT	user	0	B(r/w)	0=the element is spare. 1=the element is **ACT**ivated.	–
3	IDENT	user	0	–	**IDENT**ify.	0 - 255
20	NET	user	1	–	**NET**work number. Defined at the MVIMOD DB element for CI534.	0 - 9

Terminal Description, Base part 1 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
21	REMNODE	user	1	–	**REM**ote **NODE** number. RTU number (node) of the receiving RTU. REMNODE must be the same as in the corresponding MVINODE.	0 - 99
17	SOURCE	user	RECEIVE	–	**SOURCE**. Direction of the data transmission. RECEIVE=Receiving MVB SEND=Sending MVB	–
19	BLOCKED	user	0	B(r/w)	**BLOCKED**. Cyclic execution of the specified command is 0=not BLOCKED 1=BLOCKED	The cycle time is defined by the terminal SCAN_FTR. For MVB's with SOURCE=RECEIVE: BLOCKED=1 blocks the reception of MVB's by polling.
22	SCAN_FTR	user	4	–	**SCAN F**ac**T**o**R**. In multiples of basic scan cycle time.	1 - 127
18	VALID	system	–	B(r/w)	**VALID** after successful execution of the RTU command. 0=data has not been sent 1=data has been sent	For MVB's with SOURCE= RECEIVE: The terminal will be reset by the system if no DAT's are received within the supervision time of 3∗SCAN_FTR.
24	ERR	system	–	B(r)	**ERR**or. Set if an error occurred. 0=no error 1=error	–

Base part 2



Terminal Description, Base part 2

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
6	CMDCODE	user	NOT DEFINED	–	**C**o**M**man**D CODE** to be executed.	Values are listed in table of command codes below.
9	AUXINFO1	user	0	–	**AUX**iliary **INFO**rmation **1**	0 - 2^{31}
10	AUXINFO2	user	0	–	**AUX**iliary **INFO**rmation **2**	0 - 2^{31}
11	AUXINFO3	user	–	–	**AUX**iliary **INFO**rmation **3**	Maximum 20 characters.
4	REGADDR	user	0	–	**REG**ister start **ADDR**ess.	0 - 2^{31}
5	NOOFREGS	user	0	–	**NO OF REG**ister**S**.	0 - 3250 if CMDCODE=103 or 203 0 - 128 in all other cases.
7	DATREF	user	0	I(r/w)	**DAT REF**erence in this element (max 110 for Boolean, Intl or Real, 128 for Intw).	0 - 110 or 0 - 128 0 indicates that the terminal is not used.

Terminal Description, Base part 2 (Continued)

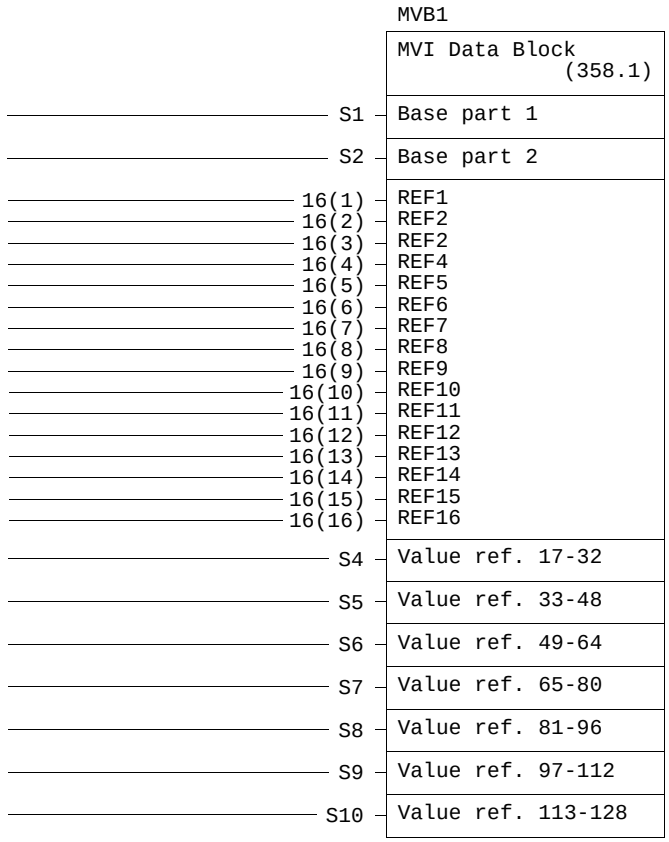
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
8	BITREF	user	0	I(r/w)	**BIT REF**erence in the above selected DAT.	0 - 32. 0 indicates that the terminal is not used.
12	NO_BREC	user	0	–	**N**umber **O**f **B**oolean **REC**ords DAT(B).	0 - 110
13	NO_INT	user	0	–	**N**umber **O**f **INT**eger records DAT(I).	0 - 128
14	NO_INTL	user	0	–	**N**umber **O**f **INT**eger **L**ong records DAT(IL).	0 - 110
15	NO_REAL	user	0	–	**N**umber **O**f **REAL** records DAT(R).	0 - 110

The use of AUXINFO1, AUXINFO2 and AUXINFO3 is protocol dependent. Please refer to the User's Guide for the protocol in question.

Values for Terminal CMDCODE

Value	Command Code	Value	Command Code
NOT DEFINED	0	READ B	103
RESTART HANDLER	1	READ R	104
RESET DIAGNOSTICS	2	READ C	105
DIAL STATION	3	READ MIX L	106
HANGUP LINE	4	WRITE I	201
GET DIAGNOSTICS	7	WRITE IL	202
SET TRACE MODE	8	WRITE B	203
TIME SYNCH	9	WRITE R	204
READ I	101	WRITE C	205
READ IL	102	WRITE MIX L	206

Value ref. 1-16



Value ref. 17-32, Value ref. 33-48, Value ref. 49-64, Value ref. 65-80, Value ref. 81-96, Value ref. 97-112, Value ref. 113-128

The value references 17-128 are analogous to Value ref. 1-16.

Terminal Description, Value ref. 1-128

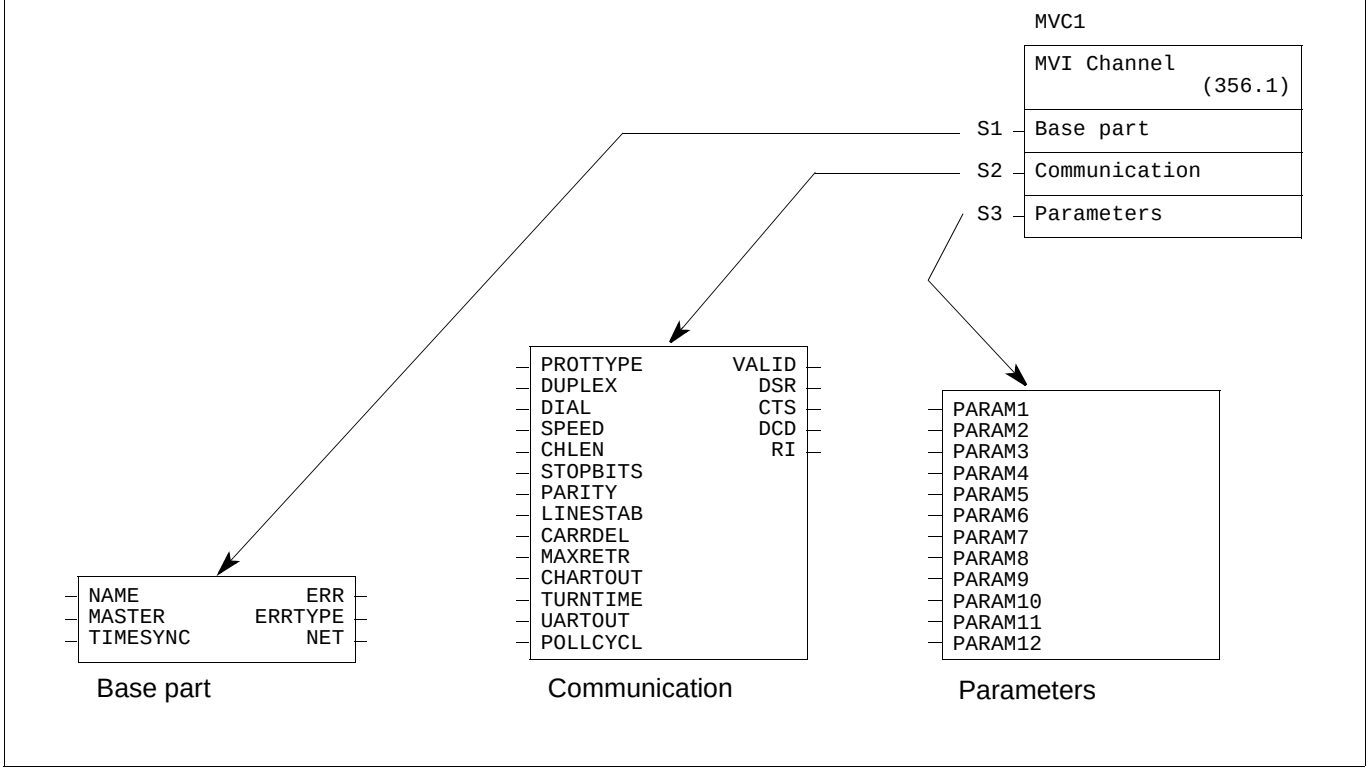
Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
16(1)	REF1	user	*See Remarks*	–	**REF**erence: Name of connected DAT element (number **1**).	If Data Set has the name ”FORMULA” and NO_BREC, NO_INT, NO_INTL and NO_REAL has the value 1, the name of the connected DAT elements will be: FORMULA.B1 FORMULA.I1 FORMULA.IL1 FORMULA.R1
16(2)	REF2	user	*See Remarks*	–	**REF**erence: Name of connected DAT element (number **2**).	
:	:	:	:	:	:	
16(128)	REF128	user	*See Remarks*	–	**REF**erence: Name of connected DAT element (number **128**).	

MVI Channel MVICHAN

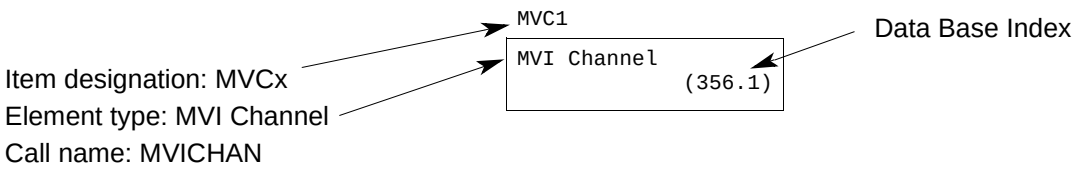
Summary

The line characteristics of CI534V0xx are specified in one MVICHAN data base element for each communication channel. This means that one CI534V0xx is fully configured by one MVIMOD data base element and two MVICHAN data base elements. A maximum of 9 elements can exist in a node.

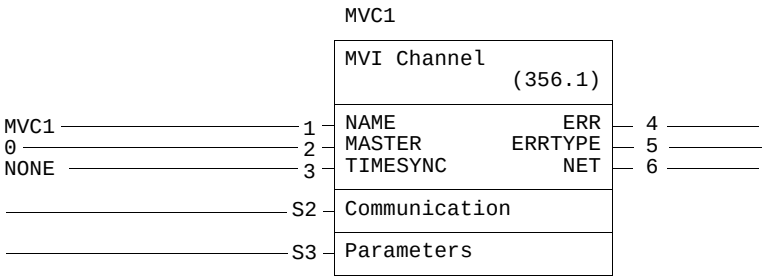
Overview



Head



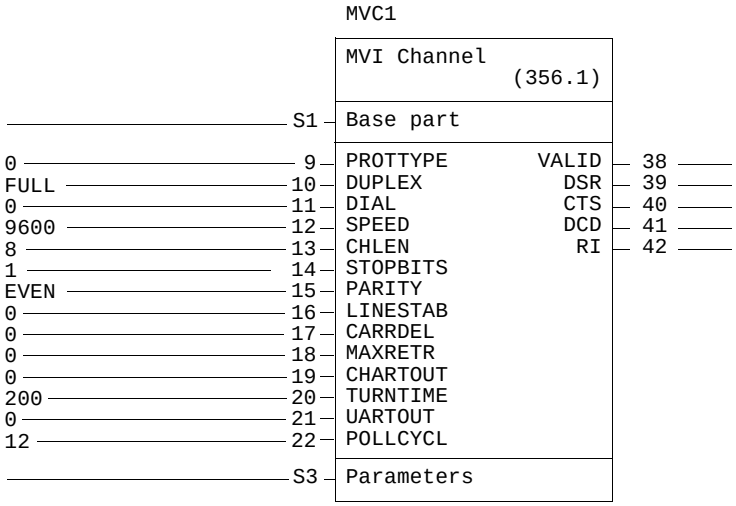
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	MVCx	–	Unique element **NAME**.	Maximum 20 characters.
2	MASTER	user	0	B(r/w)	MVI channel in: 0=slave mode 1=**MASTER** mode	–
3	TIMESYNC	user	NONE	–	**TIME SYNC**hronization. Values: NONE, MASTER, SLAVE	–
4	ERR	system	0	B(r)	**ERR**or.	–
5	ERRTYPE	system	0	IL(r)	**ERR**or **TYPE**.	–
6	NET	system	0	I(r)	**NET**work number of MVI channel.	–

Communication



Terminal Description, Communication

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
9	PROTTYPE	user	0	I(r/w)	**PROT**ocol **TYPE.**	0 - 255
10	DUPLEX	user	FULL	I(r/w)	**DUPLEX** mode, concerns modem signals between MVI channel and modem. Values: FULL, HALF, HALF (DCD IGNORED)	–
11	DIAL	user	0	B(r/w)	**DIAL**ing. 0=disabled (used for private line) 1=enabled (used for dial line)	–
12	SPEED	user	9600	I(r/w)	Transmission **SPEED** of communication in bits/second. Values: 150, 300, 600, 1200, 2400, 4800, 9600, 19200	–
13	CHLEN	user	8	I(r/w)	**CH**aracter **LEN**gth in bits. Values: 7, 8	–

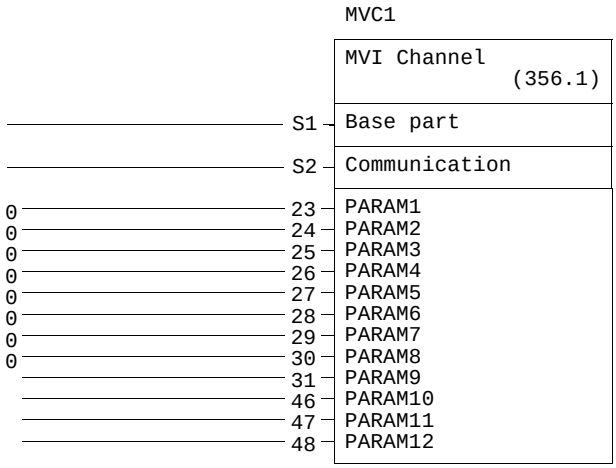
Terminal Description, Communication (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
14	STOPBITS	user	1	I(r/w)	**STOP BITS**. Values: 0.5, 1, 1.5, 2	–
15	PARITY	user	EVEN	I(r/w)	**PARITY**. Values: NONE, ODD, EVEN	–
16	LINESTAB	user	0	I(r/w)	**LINE STAB**ilization time in number of character transmission times. Time to allow the carrier wave to stabilize before transmission of the first character. Restrictions for half duplex: “(own) LINESTAB time ≥ (opposite side) CARRDEL time”	0 - 15
17	CARRDEL	user	0	I(r/w)	**CARR**ier **DEL**ay time in number of character transmission times. Time to wait after the transmission of the last character before deactivating RTS. This delay is used to avoid destruction of the last character in the message, due to lost carrier.	0 - 15
18	MAXRETR	user	0	I(r/w)	**MAX**imum number of **RETR**ansmissions before line is considered broken.	0 - 20
19	CHARTOUT	user	0	I(r/w)	**CHAR**acter **T**ime-**OUT** time in number of character transmission times. Used by receive routine to detect idle receive line. 0: no check for time-out is made.	0 - 15
20	TURNTIME	user	200	IL(r/w)	**TURN** around **TIME** in milliseconds. Time to wait as from the last character in the command until the first character in the reply, i.e. the time-out time.	0 - 20000
21	UARTTOUT	user	0	I(r/w)	**UART** transmission **T**ime-**OUT** in number of character transmission times. If half duplex is used, a check of DCD will be made by the send routine before activating RTS. If DCD is activated the send routine will wait for DCD to be deactivated up to this time before aborting the transmission.	0 - 15

Terminal Description, Communication (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
22	POLLCYCL	user	12	I(r/w)	Maximum time between two **POLL**ing **CYCL**es in seconds.	0 - 255
38	VALID	system	–	B(r)	Signals DSR etc. is **VALID**	–
39	DSR	system	–	B(r)	Modem signal **D**ata **S**et **R**eady.	–
40	CTS	system	–	B(r)	Modem signal **C**lear **T**o **S**end	–
41	DCD	system	–	B(r)	Modem signal **D**ata **C**arrier **D**etect.	–
42	RI	system	–	B(r)	Modem signal **R**ing **I**ndicator.	–

Parameters



Terminal Description, Parameters

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
23	PARAM1	user	0	IL(r/w)	Protocol dependent parameter.	0 - 2^{31}
24	PARAM2	user	0	IL(r/w)	Protocol dependent parameter.	0 - 2^{31}
:	:	:	:	:	:	:
30	PARAM8	user	0	IL(r/w)	Protocol dependent parameter.	0 - 2^{31}
31	PARAM9	user	–	A20(r/w)	Protocol dependent string parameter.	Maximum 20 characters.
46	PARAM10	user	–	A20(r/w)	Protocol dependent string parameter.	Maximum 20 characters.
47	PARAM11	user	–	A20(r/w)	Protocol dependent string parameter.	Maximum 20 characters.
48	PARAM12	user	–	A20(r/w)	Protocol dependent string parameter.	Maximum 20 characters.

NOTE

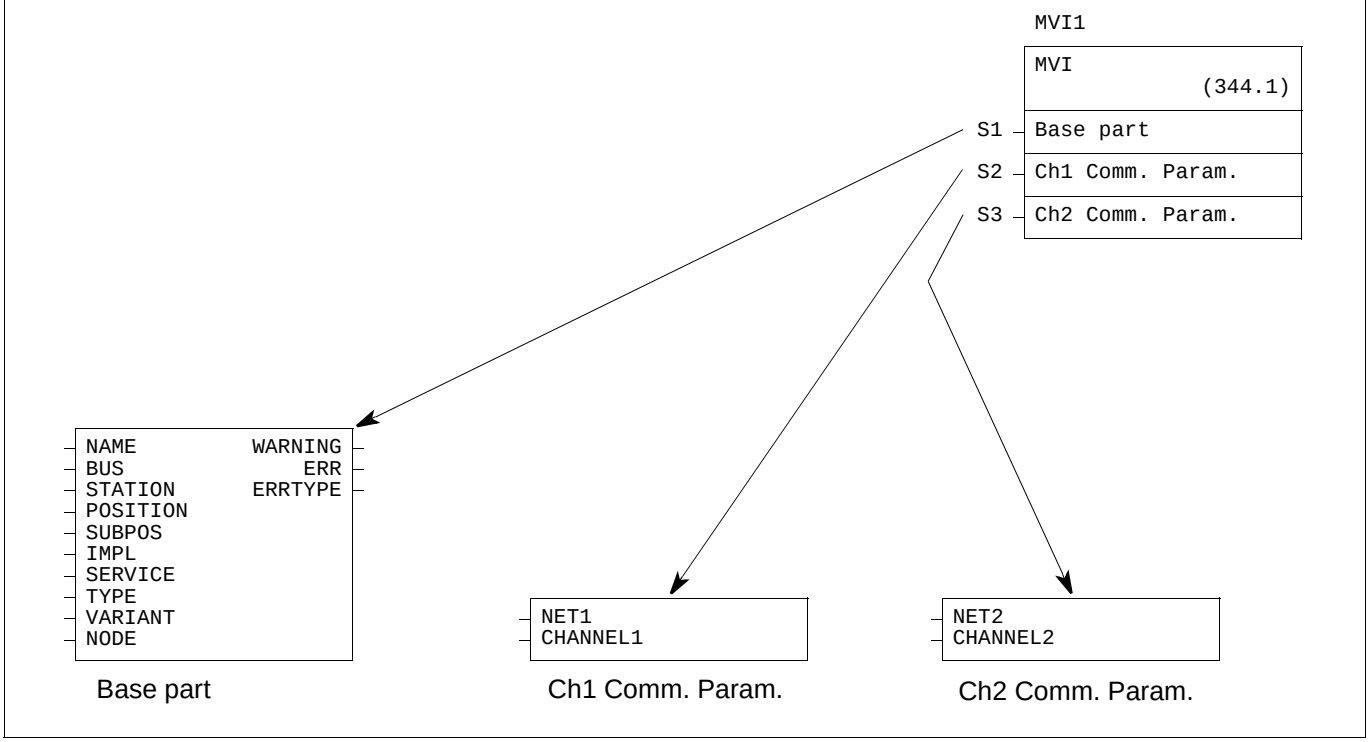
The values of the inputs MASTER, TIMESYNCH, DUPLEX, DIAL, LINESTAB, CARRDEL, MAXRETR, CHARTOUT, TURNTIME, UARTTOUT and POLLCYCL is protocol dependent. The use of PARAM1 … PARAM9 is protocol dependent. Please refer to the User's Guide for the protocol in question.

MVI MVIMOD

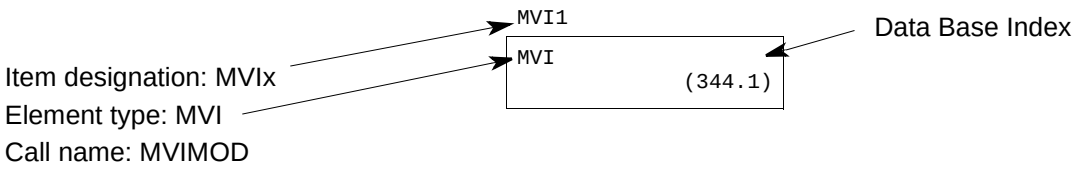
Summary

The MVIMOD data base element specifies the Multi Vendor Interface module. The element contains diagnostic information of the module as well as the RS 232-C modem signals. The MVI networks are to be considered as Local Control Networks. An AC400 node in MasterNet can have maximum 9 Local Control Networks, which means that maximum 9 MVIMOD data base elements can be created. Note, that the protocol string is not displayed any longer.

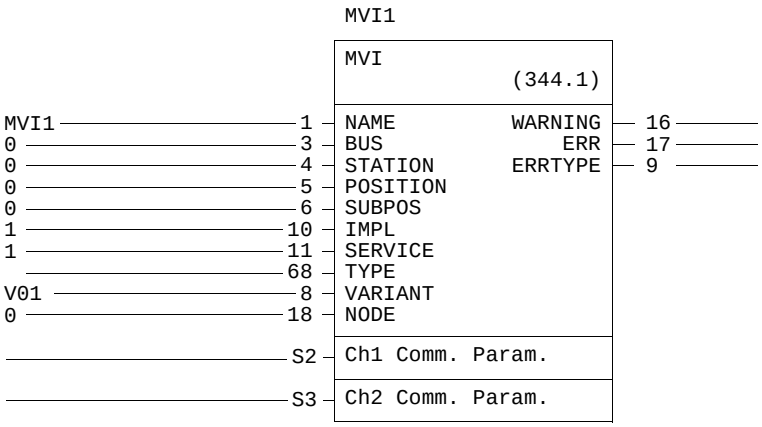
Overview



Head



Base part



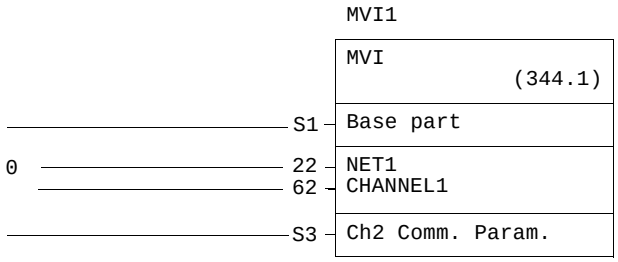
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	MVIx	–	Unique **NAME** of the element.	–
3	BUS	predef	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction
4	STATION	predef	0	–	**STATION**. Part of Address.	
5	POSITION	user	0	–	**POSITION**. Part of Address.	
6	SUBPOS	user	0	–	**SUBPOS**. Part of Address.	
10	IMPL	user	1	–	0=the module is spare 1=the module is **IMPL**emented	–
11	SERVICE	user	1	–	The in-**SERVICE** terminal shows whether the module is in service or has been taken out of service.	–
68	TYPE	user	–	A10(r/w)	Hardware **TYPE** designation.	–
8	VARIANT	user	V01	–	MVI protocol **VARIANT**.	V01 - V49
18	NODE	user	0	–	**NODE** number of the Advant Controller. Note! Once you have set the node number, it can not be changed.	0 - 255
16	WARNING	system	0	B(r)	**WARNING** flag indicating non-fatal errors.	–

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
17	ERR	system	0	B(r)	**ERR**or flag indicating hardware or configuration error.	–
9	ERRTYPE	system	0	I(r)	**ERR**or **TYPE**.	–

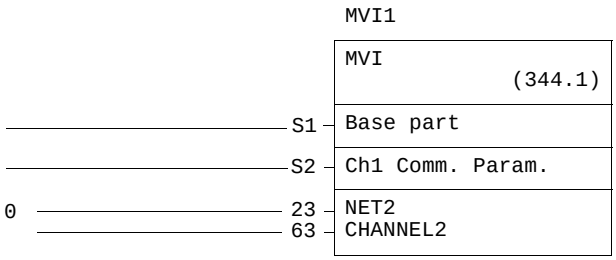
Ch1 Comm. Param.



Terminal Description, Ch1 Comm. Param.

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
22	NET1	user	0	–	**NET**work number, channel 1.	0 - 9
62	CHANNEL1	user	–	–	Name of corresponding MVICHAN element.	–

Ch2 Comm. Param.

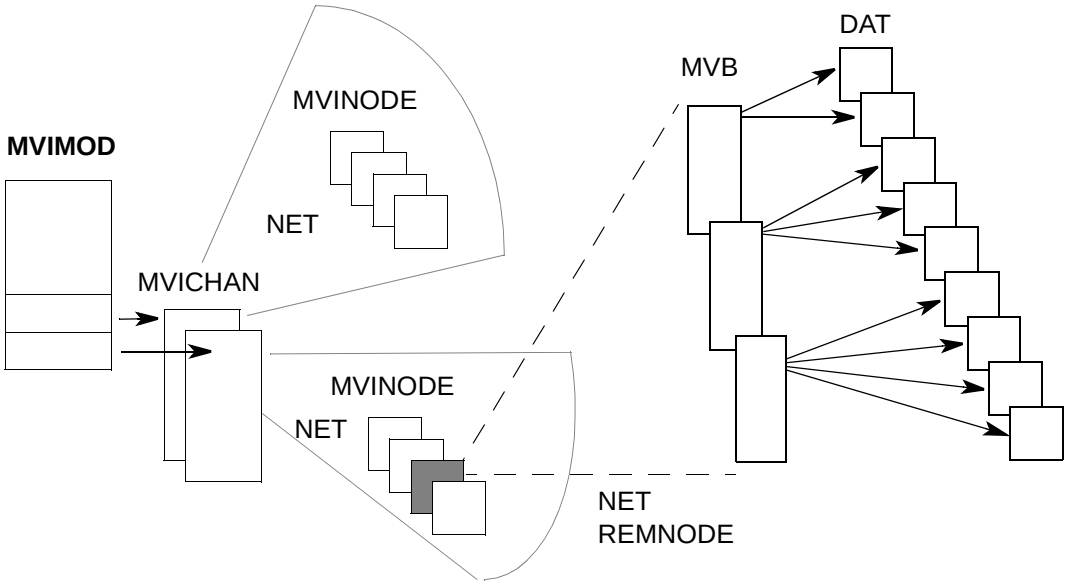


Terminal Description, Ch2 Comm. Param.

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
23	NET2	user	0	–	**NET**work number, channel **2**.	0 - 9
63	CHANNEL2	user	–	–	Name of corresponding MVICHAN element.	–

Hierarchy of MVI Data Base Elements

Hierarchy of MVI data base elements



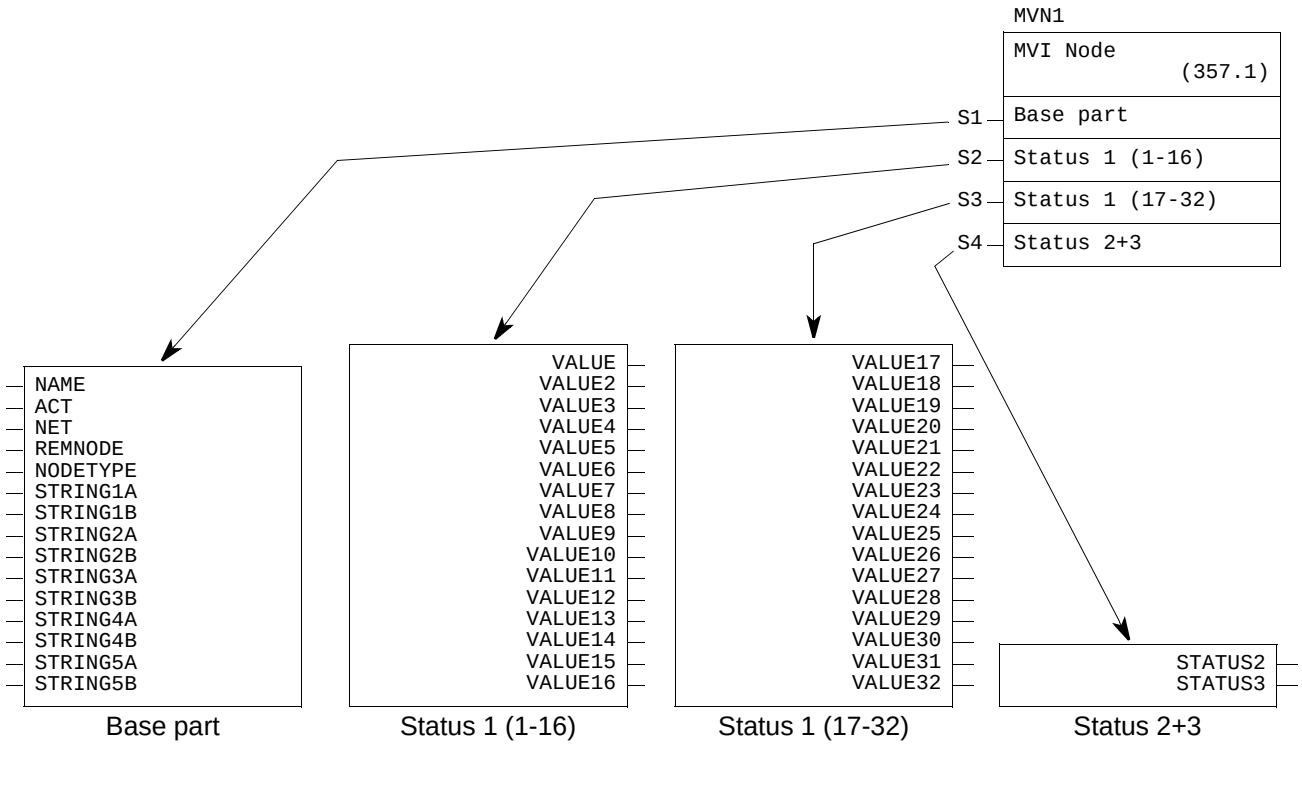
MVI Node MVINODE

Summary

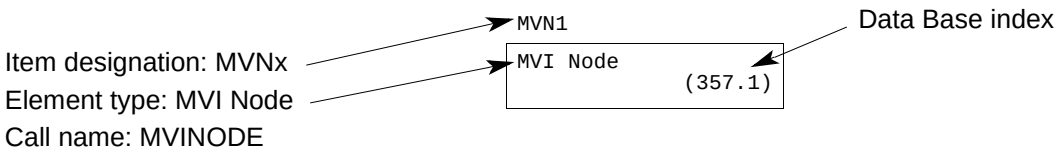
Every node on a MVI local control network is represented by a data base element of type MVI Node. The element specifies:

- In master mode: Each slave node on the bus is represented by one data base element.
- In slave mode: Only one data base element representing the slave node view of the master node can be found.

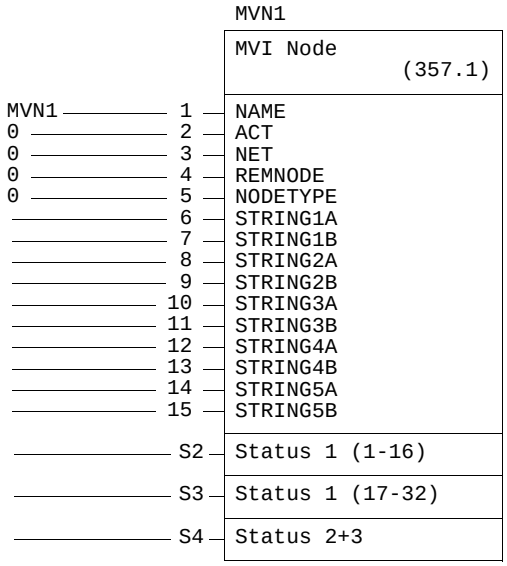
Overview



Head



Base part

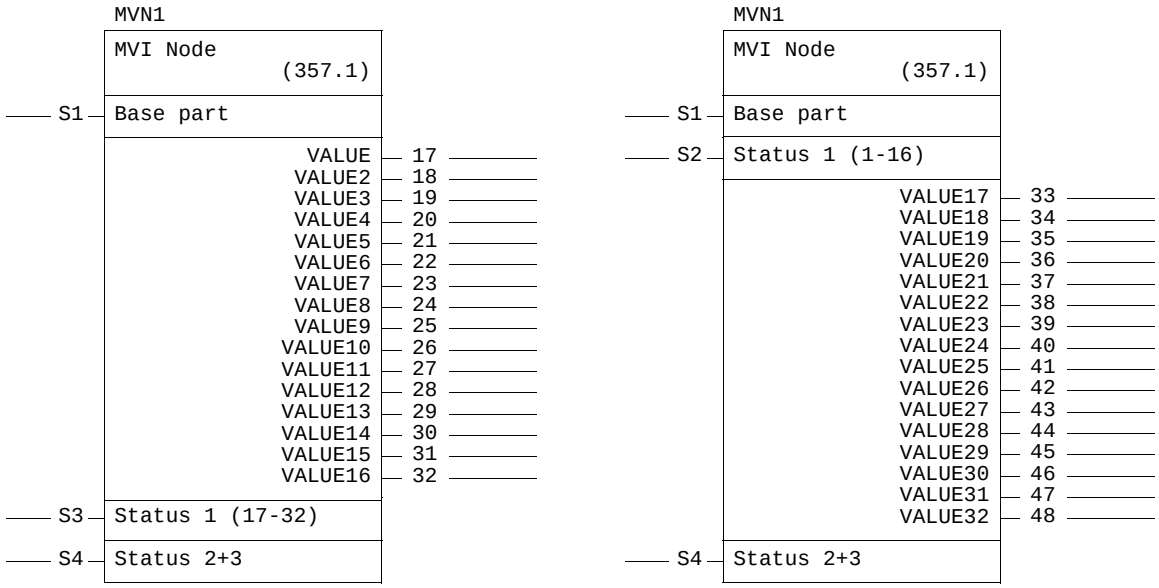


Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	MVNx	–	Unique module **NAME**.	Maximum 20 characters.
2	ACT	user	0	B(r/w)	0=the element is spare 1=the element is **ACT**ive	–
3	NET	user	0	–	**NET**work number of remote node.	0 - 9
4	REMNODE	user	0	I(r/w)	**REM**ote **NODE** number.	0 - 99
5	NODETYPE	user	0	I(r/w)	Remote **NODE TYPE**.	0 - 32767
6	STRING1A	user	–	A20(r/w)	**STRING 1A**.	Maximum 20 characters.
7	STRING1B	user	–	A20(r/w)	**STRING 1B**.	Maximum 20 characters.
:	:	:	:	:	:	:
15	STRING5B	user	–	A20(r/w)	**STRING 5B**.	Maximum 20 characters.

The use of STRING1A(B)-STRING5A(B) is protocol dependent. Please refer to the User's Guide for the protocol in question.

Status 1 (1-16) / Status 1 (17-32)

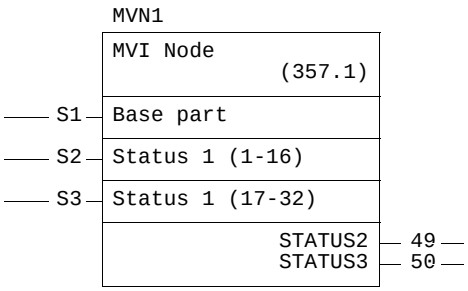


Terminal Description, Status 1 (1-16) / Status 1 (17-32)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
17	VALUE	system	–	B(r/w)	First status **VALUE** of the remote node.	_
18	VALUE2	system	–	B(r/w)	Status **VALUE 2** of the remote node.	–
:	:	:	:	:	:	:
48	VALUE32	system	–	B(r/w)	Status **VALUE 32** of the remote node.	–

The use of Status 1 is protocol dependent. Please refer to the User's Guide for the protocol in question.

Status 2+3



Terminal Description, Status 2+3

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
49	STATUS2	system	–	IL(r/w)	**STATUS 2** of the remote node.	0 - 2^{31}
50	STATUS3	system	–	IL(r/w)	**STATUS 3** of the remote node.	0 - 2^{31}

The use of STATUS2 and STATUS3 is protocol dependent. Please refer to the User’s Guide for the protocol in question.

NETWL NETWL

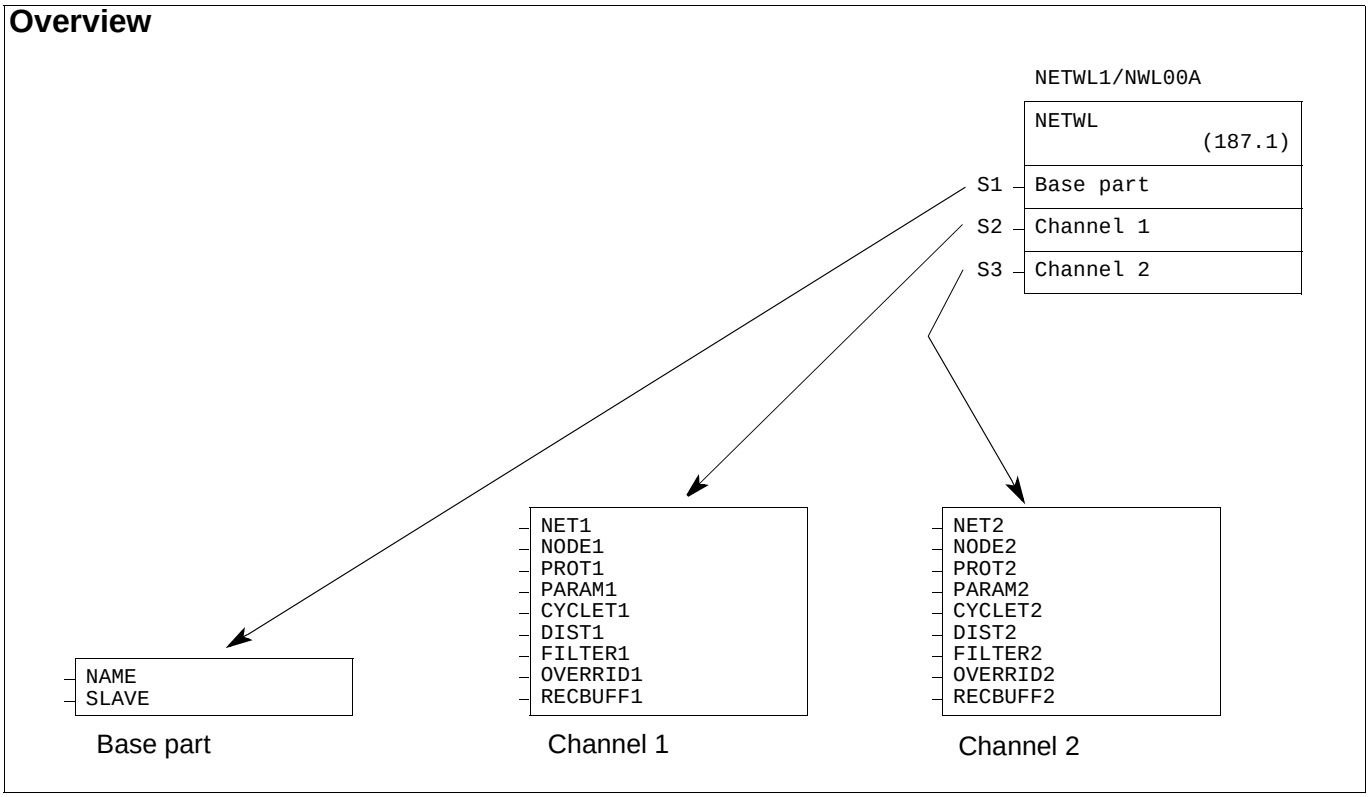
Summary

The NETWL data base element specifies parameters for selecting protocol type and parameters for the network dynamic routing scheme. The parameters are defined separately for each LAN channel.

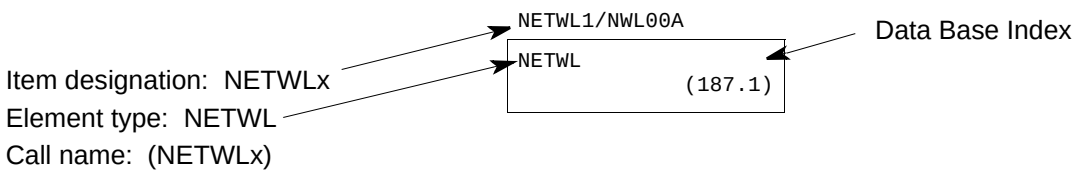
Advant Controller 410 and Advant Station 500 Series use the data base concept with index 187.9.

Advant Controller 450 use the data base concepts 187.1-187.6 and 187.9.

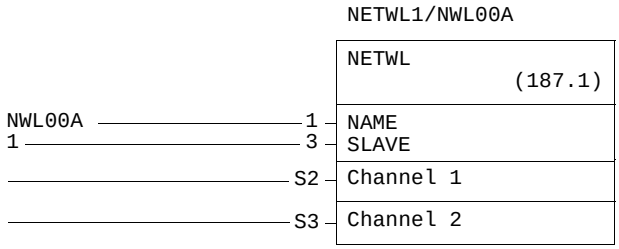
Overview



Head



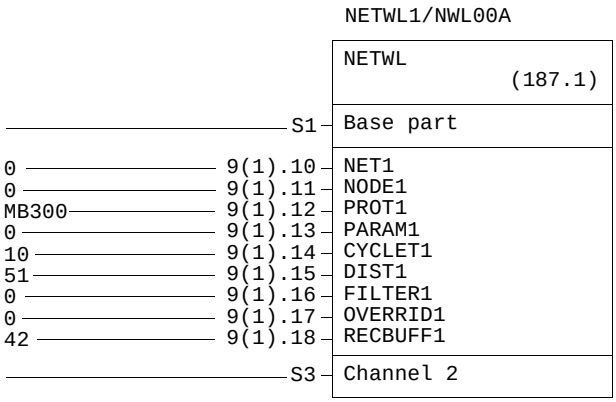
Base part



Terminal Description, Base part

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	system	NWL00x	A6(r)	**NAME** of element. x = A … I.	Max. 6 characters.
3	SLAVE	user	*x for* NETWLx	–	**SLAVE** processor.	–

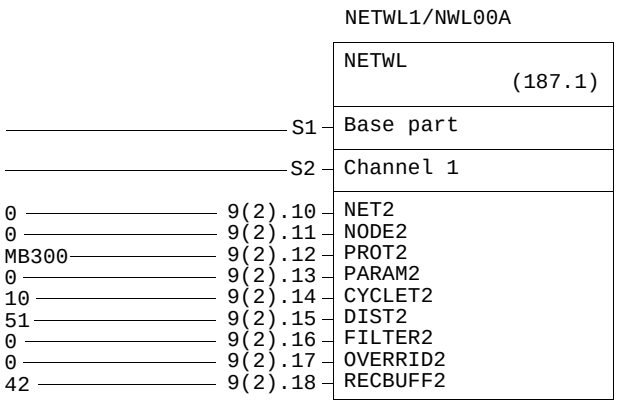
Channel 1



Terminal Description, Channel 1

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
9(1).10	NET1	user	0	–	**NET**work number, channel **1**.	–
9(1).11	NODE1	user	0	–	**NODE** number, channel **1**.	–
9(1).12	PROT1	user	MB300	–	**PROT**ocol, channel **1**. The following protocols are available: MB300, MB300_F, MB300_E, GCOM, GCOM_F, GCOM_S.	Protocol type.
9(1).13	PARAM1	user	0	–	**PARAM**eter, channel **1**.	Not used.
9(1).14	CYCLET1	user	10	–	**CYCLE T**ime, channel **1**.	Range 10..127 for MB300E.
9(1).15	DIST1	user	51	–	**DIST**ance table size, channel **1**.	–
9(1).16	FILTER1	user	0	–	**FILTER**, channel **1**.	–
9(1).17	OVERRID1	user	0	–	**OVERRID**e, channel **1**.	–
9(1).18	RECBUFF1	user	42	–	**REC**eive **BUFF**ers, channel **1**.	–

Channel 2



Terminal Description, Channel 2

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
9(2).10	NET2	user	0	–	**NET**work number, channel **2**.	–
9(2).11	NODE2	user	0	–	**NODE** number, channel **2**.	–
9(2).12	PROT2	user	MB300	–	**PROT**ocol, channel **2**. The following protocols are available: MB300, MB300_F, MB300_E, GCOM, GCOM_F, GCOM_S.	Protocol type.
9(2).13	PARAM2	user	0	–	**PARAM**eter, channel **2**.	Not used.
9(2).14	CYCLET2	user	10	–	**CYCLE T**ime, channel **2**.	Range 10..127 for MB300E.
9(2).15	DIST2	user	51	–	**DIST**ance table size, channel **2**.	–
9(2).16	FILTER2	user	0	–	**FILTER**, channel **2**.	–
9(2).17	OVERRID2	user	0	–	**OVERRID**e, channel **2**.	–
9(2).18	RECBUFF2	user	42	–	**REC**eive **BUFF**ers, channel **2**.	–

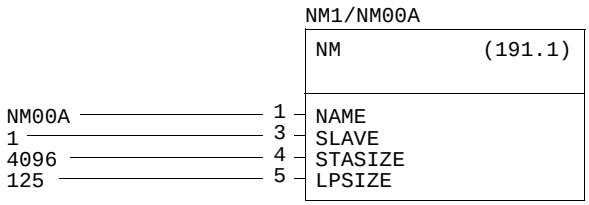
NM NM

Summary

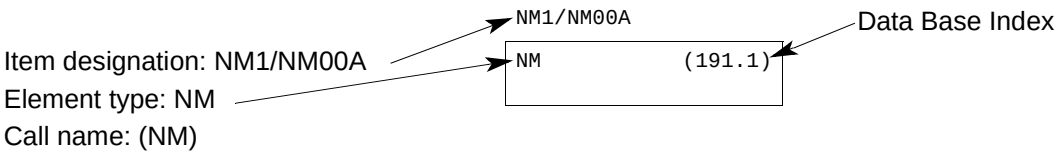
The NM data base element is used to define the size of the network management resources.

The values in the NM data base element may only be read.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	system	NM00x	A6(r)	**NAME** of element. x = A … I.	–
3	SLAVE	system	–	I(r)	This terminal indicates on which **SLAVE** processor the network management system is resident.	If value=0 then the Network Management system is resident on host processor. If value >0 then the number indicates the slave number on which the Network Management system is residing.
5	STASIZE	system	4096	I(r)	**STA**tistical **SIZE**. This terminal determines the size (expressed in byte).	A statistical log buffer must be present in the Network Management system.

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
6	LPSIZE	system	125	I(r)	**L**og**P**oint **SIZE**. This terminal determines the size of the logpoint log buffer. LPSIZE is expressed in number of logpoints. Each logpoint requires 8 byte in the buffer.	Possible values 1 - 255.

Predefined Board Identities

Data Base index LF.LR	Item Designation	Name	SLAVE
191.1	NM1	NM00A	1
191.2	NM2	NM00B	2
191.3	NM3	NM00C	3
191.4	NM4	NM00D	4
191.5	NM5	NM00E	5
191.6	NM6	NM00F	6
191.7	NM7	NM00G	7
191.8	NM8	NM00H	8
191.9	NM9	NM00I	9

System Init

You can start communication in four different ways:

1. Insert a correctly strapped CS513 module in Advant Controller 410, SC 510 or SC 520.
2. Leave the configuration mode.
3. Activate the INIT switch on the host processor front panel.
4. Give the ECONFIG or RECONFIG command.

If you leave the configuration mode, enter the Advant Station 100 Series Engineering Station command DICONFIG or activate the INIT switch on the host processor, the Advant OCS with Master software, including all its communication, is restarted.

NOTE

The first CS513 you insert baptizes the station with a node number. If an erroneous node number is introduced by mistake, cold start the station via the switch on the host processor or give the RECONFIG command before a new node number is accepted.

When communication restarts, a cold start-up is performed, i.e. connections are reestablished. Communication restarts within approximately 20 seconds.

Verifying MasterBus 300

LED indications on CS513

Name	Defining	LED color
F	Fault	Red
R	Run	Green
TX/LAN	Transmit to LAN	Yellow
RX	Receive from LAN	Yellow

LED indications on SC 5X0

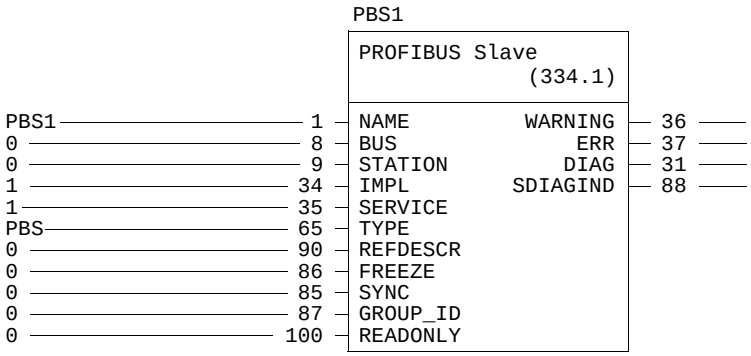
Name	Defining	LED color
F	Fault	Red
RUN	Run	Green

PROFIBUS Slave PBS

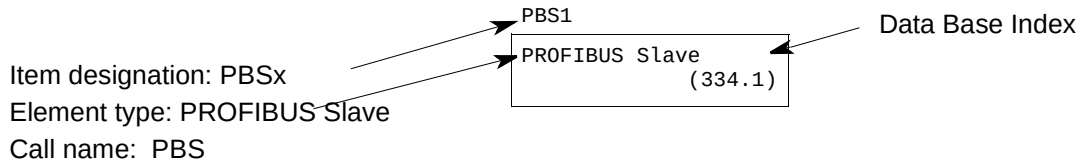
Summary

The PBS data base element specifies a PROFIBUS slave on a PROFIBUS-DP bus connected to an Advant Controller 400 Series. The data base element contains configuration data and diagnostic information of the PROFIBUS Slave.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	PBSx	–	Unique **NAME** of the slave.	Maximum 20 characters.
8	BUS	user	0	–	Unique **BUS** number for this fieldbus.	0 - 255. Cannot be changed when system is in operational mode. 0 not allowed for an active bus.

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
9	STATION	user	0	–	**STATION** address representing the slave on the fieldbus.	0 - 125. Cannot be changed when IMPL=1 in operational mode. 0 not allowed for an active bus.
34	IMPL	user	1	B(r)	0=the module is spare 1=the module is **IMPL**emented.	–
35	SERVICE	user	1	B(r/w)	1=the module has been taken out of **SERVICE**.	–
65	TYPE	user	PBS	–	**TYPE** designation of hardware module. This is the description shown in the Operator Station System Status Display.	Maximum 10 characters.
90	REFDESCR	user	–	–	**REF**erence to PROFIBUS Slave **DESCR**iption data base element.	Name of the corresponding PBSD DB element.
86	FREEZE	predef	0	B(r/w)	**FREEZE** PROFIBUS slave.	Not supported in this version.
85	SYNC	predef	0	B(r/w)	**SYNC**hronize PROFIBUS slave.	Not supported in this version.
87	GROUP_ID	predef	0	–	**GROUP ID** of PROFIBUS slave.	GROUP ID for the FREEZE and SYNC functions. Not supported in this version
100	READONLY	user	0	-	1=the PROFIBUS slave shall be READONLY, another PROFIBUS DP master configures and updates it. 0=the PROFIBUS slave shall be configured and updated by this AC400 Series controller	Please note that full configuration data in the PBSD element must be provided, independent of what is specified for this terminal.
36	WARNING	system	–	B(r)	**WARNING** indicates a non-fatal error.	–
37	ERR	system	–	B(r)	**ERR**or indicates fatal errors, such as configuration errors or hardware errors.	–
31	DIAG	system	–	I(r)	**DIAG**nostics.	See the table below.
88	SDIAGIND	system	–	B(r)	PROFIBUS **S**lave **DIAG**nostics data **IND**ication.	(1)

(1) Note the difference between terminals DIAG and SDIAGIND. DIAG presents error or warning information. SDIAGIND indicates that the PROFIBUS slave has published diagnostics data. This data can be accessed with the PB-DIAG PC element.

Function

The PBS data base element specifies a PROFIBUS slave connected to an Advant Controller 400 Series via PROFIBUS bus. The data base element contains configuration and diagnostic information of the PROFIBUS slave. The PROFIBUS Slave data base element can be created and deleted in an Advant Controller 400 Series. It is possible to disable the function of the element by setting the IMPL terminal to 0. The READONLY terminal defines if the slave shall be read from only, and thereby is updated and configurated by another PROFIBUS master.

PROFIBUS Slave Set-up Procedure

With the data base element you set up the PROFIBUS slave for the process communication

program.

The PROFIBUS slave set-up procedure includes:

1. Implementation
2. Service
3. Selection of address (BUS, STATION) terminals
4. Diagnostics.

1. Implementation

In the PROFIBUS function in the AC400 Series there is a strong connection between the CI541 IMPL terminal and the PBS IMPL terminal. New PROFIBUS slaves can only be added when the IMPL terminal on the CI541 is set to 0. When adding PROFIBUS slaves, the IMPL terminal on the PBS element must be set **before** the IMPL terminal on the CI541 if the PROFIBUS slave shall be activated. If the IMPL terminal on the PBS element is set to 1 **after** the IMPL terminal on the CI541 element, the PROFIBUS slave will remain passive. The normal procedure to add PROFIBUS slaves is therefore:

1) Set IMPL terminal on CI541 to 0

2) Add the PROFIBUS Slave (i.e. create and configure DB elements PBS and PBSD)

3) Set the IMPL terminal on the PBS element to 1

4) Set the IMPL terminal on the CI541 element to 1. This will start the PROFIBUS bus and activate the slaves.

2. Service

Setting the SERVICE terminal to 0 disables all supervision of the PROFIBUS Slave. This can be used for temporary disabling the unit.

3. Selection of Address (BUS, STATION) Terminals

For the PROFIBUS Slave data base element the engineering tool checks that the specified BUS and STATION combination is unique within the AC 400 Series.

4. READONLY terminal

The terminal defines if the PROFIBUS slave shall be read only if set to 1. Meaning that it is updated and configured by another PROFIBUS master device, for example another controller. Both input and output values from the slave can be read. The default value 0, means that the PROFIBUS slave is updated and configured by this AC400 Series controller. Please note that independent on what setting that is used, all configuration data must be provided for the slave.

NOTE! This function (READONLY = 1) requires revision ‘e’ or higher of the CI541V1 communication module.

5. Diagnostics

The PROFIBUS Slave data base element indicates diagnostic information for a PROFIBUS slave on a PROFIBUS bus. The ERR terminal indicates fatal errors and WARNING terminal indicates non-fatal errors. The DIAG terminal specifies a more detailed description of what causes the error or warning indication. One or more diagnostic indicators may be set. The general diagnostics handling and the details are described in the tables below.

PROFIBUS Slave data base element general diagnostic information

Condition	WARNING	ERR	DIAG	Description
Slave is passive	–	–	PSV	The PROFIBUS slave supervision state machine is in any other state than Operational. For example during initialization. No error has been detected.
Fatal Error	–	1	*Error reason*	Possible reasons are: – Slave is not present – Fatal error reported in Object diagnostics
Non-fatal Error	1	–	*Error reason*	Possible reasons are: – Non fatal System error reported in Device Object device diagnostics. – Process error reported in Device Object device diagnostics

PROFIBUS Slave diagnostic information

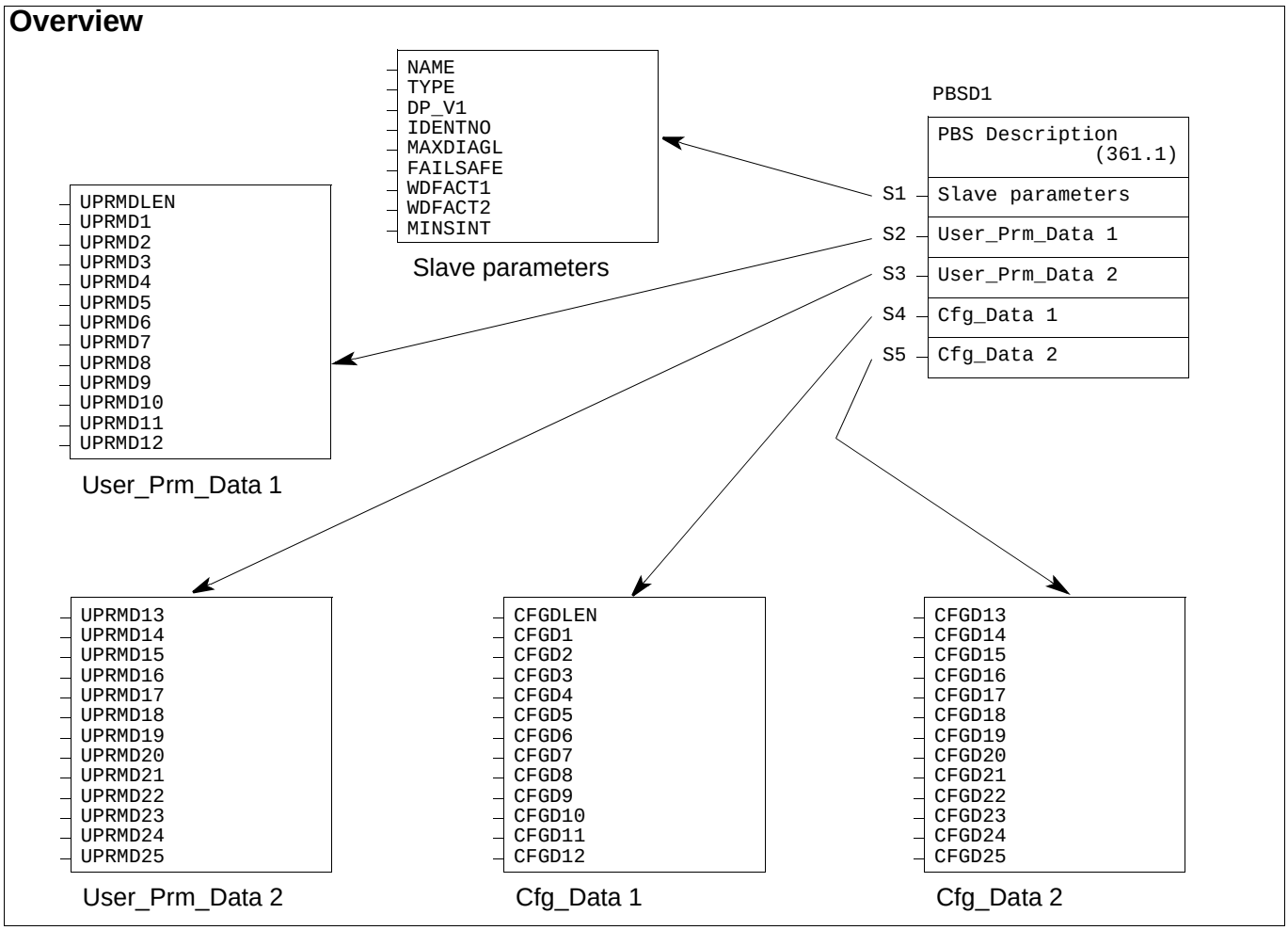
Condition	WARNING	ERR	DIAG	Action
Fieldbus **I**nterface **E**rror	–	1	FBE	Check DB element CI541 for further diagnostics.
Station **N**ot **A**vailable	–	1	SNA	Add slave to bus.
Cable **F**ailed	–	1	CF	Replace cable.
CONnection Error	–	1	CON	Check cable and device. Toggle IMPL flag.
Configuration **E**rror	–	1	CE	Check configuration in DB element.
Internal Software **E**rror	–	1	IE	Toggle the IMPL flag.
Connection **A**borted	–	1	CA	Replace slave device.
Device **D**eactivated	–	1	DD	Replace slave device or activate.
System **E**rror	1	–	SE	A non-fatal System Error. The reason for this error condition can be a number of things. Refer to system message for more detailed information.
Process **E**rror	1	–	PE	A non-fatal Process Error. Refer to system message for more detailed information.
Slave **p**a**s**si**v**e	–	–	PSV	Set the IMPL flag.
Slave **OK**	–	–	OK	Slave OK and in operation.

PBS Description PBSD

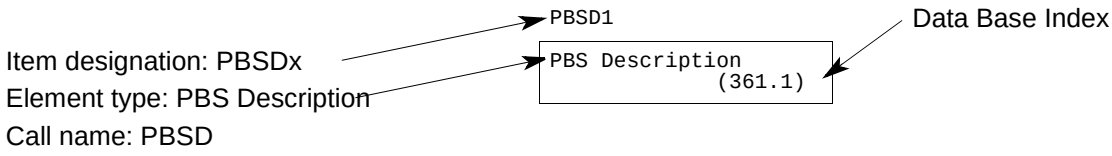
Summary

The PBS Description data base element specifies configuration and parameters for a PROFIBUS slave. Each PROFIBUS Slave data base element references a PBS Description element.

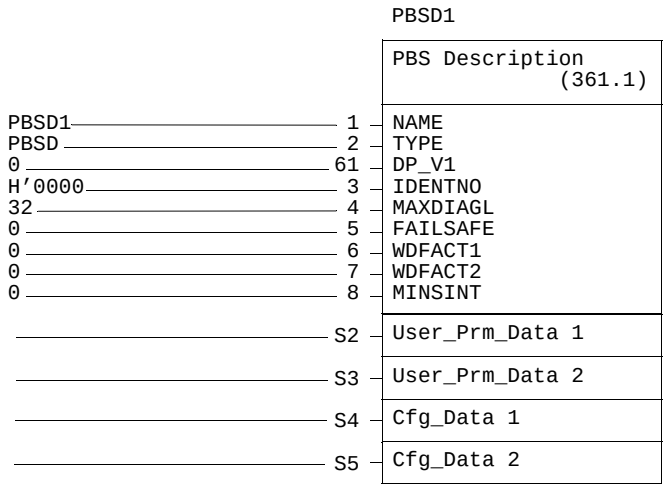
Overview



Head



Base part



Terminal Description, Base part

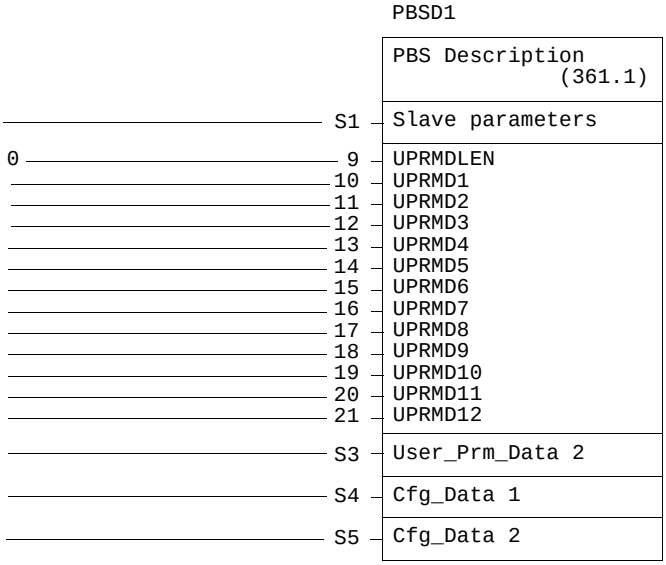
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	PBSDx	–	Unique **NAME** of the element.	Max. 20 characters.
2	TYPE	predef	PBSD	–	**TYPE** designation.	–
61	DP_V1	GSD/user	0	–	PROFIBUS slave uses **DP**/**V1** (=DP/E) functionality: 0=DP-slave functionality of EN50170 1=DP-slave with DP/V1functionality.	GSD keyword: DPV1_slave.
3	IDENTNO	GSD/user	H'0000	–	Unique PROFIBUS device **IDENT**ifier. Assigned by PNO.	H'0000 - H'FFFF. GSD keyword: Ident_Number.
4	MAXDIAGL	GSD/user	32	–	**MAX**imum **DIAG**nostic data **L**ength.	6 - 244. GSD keyword: Max_Diag_Data_Len.
5	FAILSAFE	GSD/user	0	–	**FAILSAFE** capability: 0= The master sends output data with zero length 1= The master sends output data with all outputs set to zero	GSD keyword: Fail_Safe.
6	WDFACT1	user	0	–	**W**atch **D**og **FACT**or **1**.	0 - 255. Slave dependent! The user needs to read the PROFIBUS_DP Slave user's manual supplied by the manufacturer of the specific slave.(1)
7	WDFACT2	user	0	–	**W**atch **D**og **FACT**or **2**.	

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
8	MINSINT	GSD/user	0	–	**MIN**imum **S**lave **INT**erval. Minimum time between two poll cycles (0 - 65535 × 0.1ms).	0 - 65535. GSD keyword: Min_Slave_Interval.

(1) Slave supervision of connection with time out T_{WD} = WDFACT1 × WDFACT2 × 10ms. No supervision if WDFACT1 = WDFACT2 = 0.

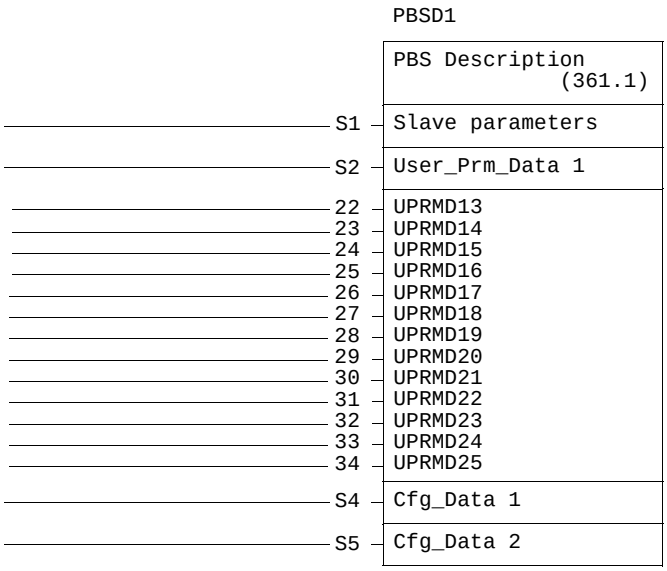
User_Prm_Data 1



Terminal Description, User_Prm_Data 1

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
9	UPRMDLEN	GSD/user	0	–	**U**ser **P**a**R**a**M**eter **D**ata **LEN**gth.	0 - 244. GSD keyword: User_Prm_Data_Len.
10	UPRMD1	GSD/user		–	**U**ser **P**a**R**a**M**eter **D**ata, **1**st 10 bytes.	20 character string representing a hexadecimal number. GSD keyword: User_Prm_Data.
11	UPRMD2	GSD/user		–	**U**ser **P**a**R**a**M**eter **D**ata, **2**nd 10 bytes.	
:	:	:	:	:	:	
21	UPRMD12	GSD/user		–	**U**ser **P**a**R**a**M**eter **D**ata, **12**th 10 bytes.	

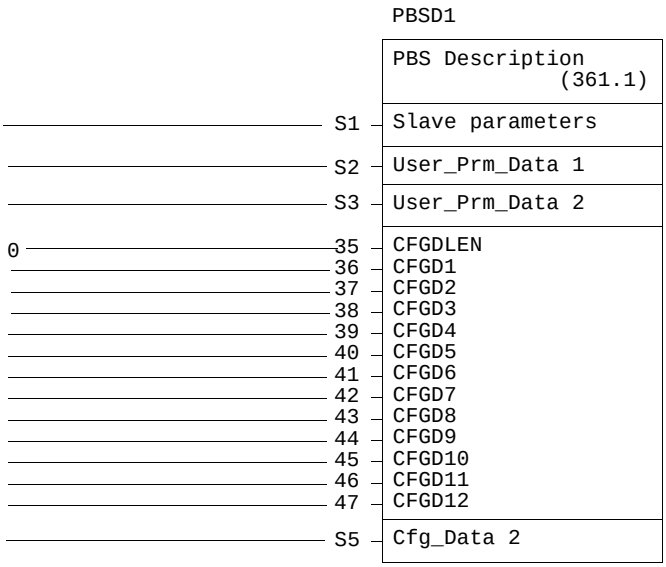
User_Prm_Data 2



Terminal Description, User parameter 2

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
22	UPRMD13	GSD/user		–	**U**ser **P**a**R**a**M**eter **D**ata, **13**th 10 bytes.	20 character string representing a hexadecimal number. GSD keyword: User_Prm_Data.
23	UPRMD14	GSD/user		–	**U**ser **P**a**R**a**M**eter **D**ata, **14**th 10 bytes.	
:	:	:	:	:	:	
34	UPRMD25	GSD/user		–	**U**ser **P**a**R**a**M**eter **D**ata, **25**th 10 bytes.	

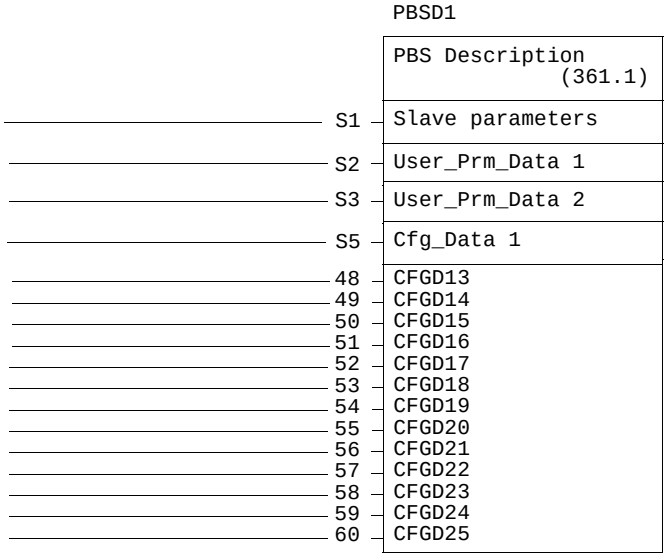
Cfg_Data1



Terminal Description, Config data 1

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
35	CFGDLEN	GSD/user	0	–	**C**on**F**i**G** **D**ata **LEN**gth. Must be calculated from the actual configuration.	0 - 244. GSD keyword: Module. (Can be several for modular devices)
36	CFGD1	GSD/user		–	**C**on**F**i**G**uration **D**ata, **1**st 10 bytes.	20 character string representing a hexadecimal number. GSD keyword: Module.
37	CFGD2	GSD/user		–	**C**on**F**i**G**uration **D**ata, **2**nd 10 bytes.	
:	:	:	:	:	:	
47	CFGD12	GSD/user		–	**C**on**F**i**G**uration **D**ata, **12**th 10 bytes.	

Cfg_Data 2



Terminal Description, Config data 2

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
48	CFGD13	GSD/user		–	**C**on**F**i**G**uration **D**ata, **13**th 10 bytes.	20 character string representing a hexadecimal number. GSD keyword: Module.
49	CFGD14	GSD/user		–	**C**on**F**i**G**uration **D**ata, **14**th 10 bytes.	
:	:	:	:	:	:	
60	CFGD25	GSD/user		–	**C**on**F**i**G**uration **D**ata, **25**th 10 bytes.	

PID Controller PIDCON

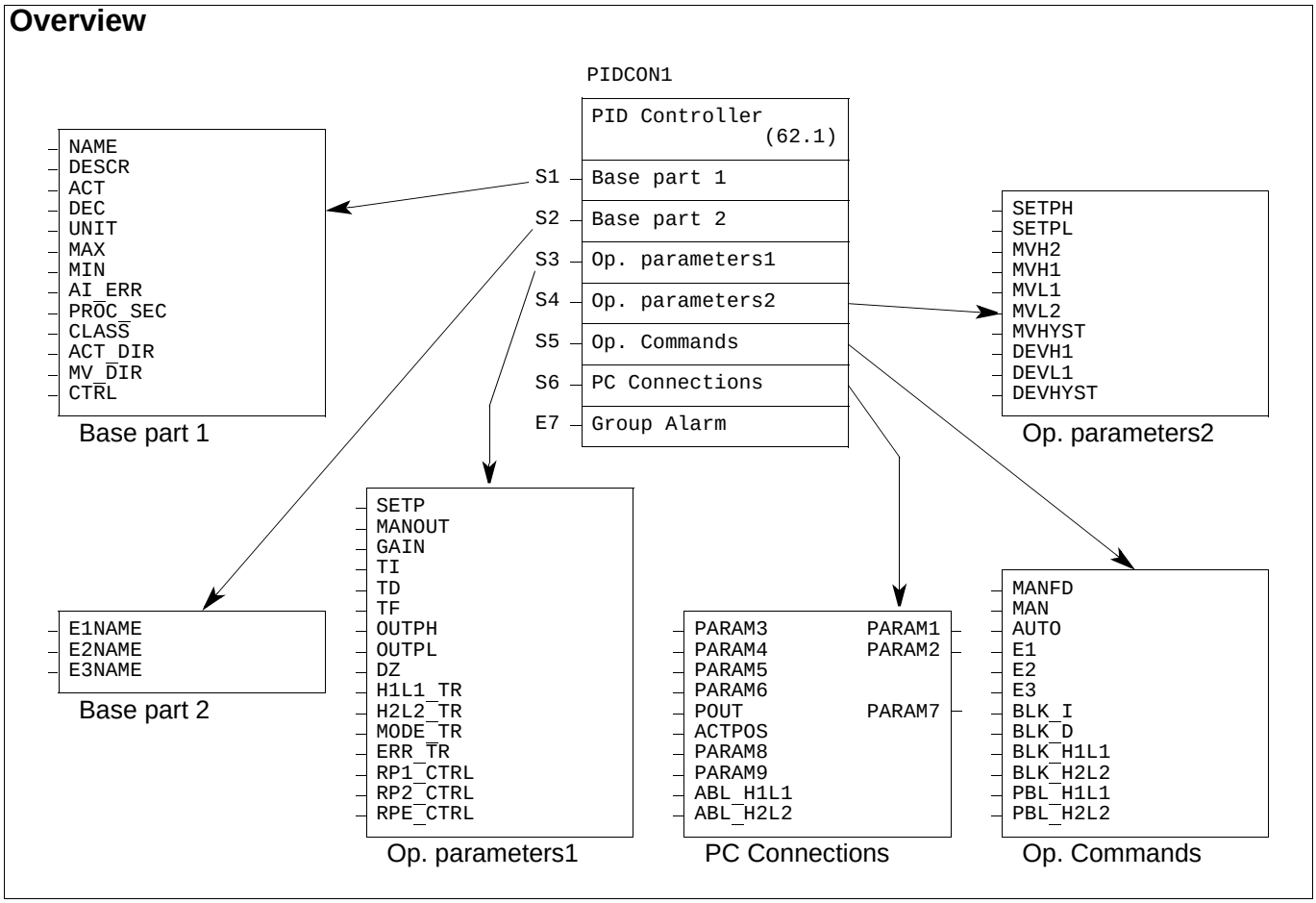
Summary

The PID Controller data base element is used to build up Advant Station 500 Series Operator Station functions for the PIDCON functional unit. Some static information in the displays can be given. Parameters which can be changed from the dialog can be given start values. The element performs an interface between the PC-program/process function and Advant Station 500 Series Operator Station.

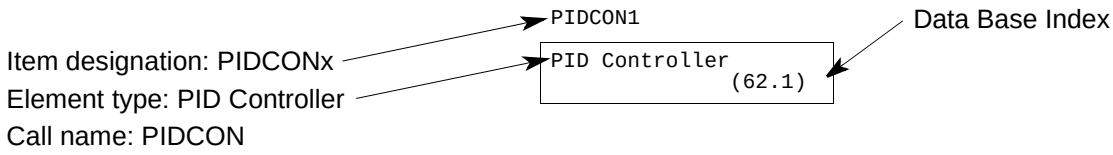
For further information, please refer to the description of the functional unit PIDCON.

For information about the extension parts of Group Alarm see data base element Group Member.

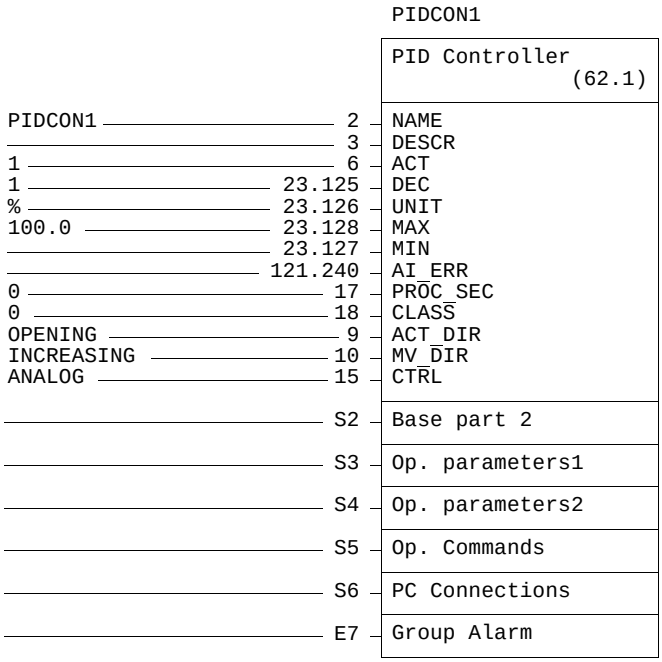
Overview



Head



Base part 1



Terminal Description, Base part 1

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
2	NAME	user	PIDCONx	–	Each Process Controller must have a unique **NAME**. E.g. TICA107.	Max. 20 characters. Spaces are not allowed.
3	DESCR	user	–	–	This **DESCR**iption of the Process Controller will be shown in Operator Station.	Max. 20 characters. Any information regarding the object may be entered.
6	ACT	user	1	B(r/w)	1=operator communication is **ACT**ive.	0=dialog is blocked and events are not updated.

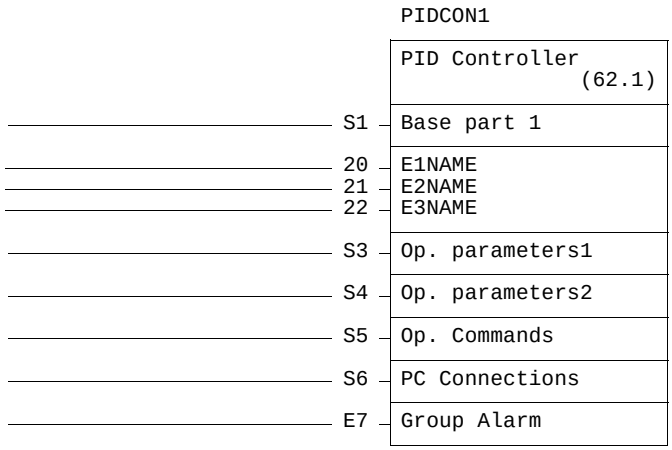
Terminal Description, Base part 1 (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
23.125	DEC	user	1	–	The number of **DEC**imals for measured value and its alarm limits and for setpoint and autosetpoint and range min and range max.	A total number of 5 figures plus point and sign can be presented. 0 - 6 decimals.
23.126	UNIT	user	%	A6(r)	The **UNIT** of the measured value and setpoint in engineering unit.	Max. 6 characters shown in Operator Station and data base element.
23.128	MAX	user	100.0	R(r/w)	**MAX**imum value within measuring range.	Used for scaling of bar graph. If the parameter is controlled by PC-program please see Application note in function description.
23.127	MIN	user	0.0	R(r/w)	**MIN**imum value within measuring range.	Used for scaling of bar graph. If the parameter is controlled by PC-program please see Application note in function description.
121.240	AI_ERR	user	–	–	**AI ERR**or. Reference to the Analog Input element which is used for the measured value.	Connects error flag in the analog input to PIDCON. E.g. FT 107. An initiation must be made in the Advant Controller 400 Series system before the change is accomplished.
17	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
18	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station	–
9	ACT_DIR	user	OPE NING	B(r/w)	**ACT**uator **DIR**ection. Used for presentation in the object and group displays: OPENING: actuator open at 100% output. CLOSING: actuator closed at 100% output.	–
10	MV_DIR	user	INCREA SING	B(r/w)	**M**easured **V**alue **DIR**ection. Used for presentation in the object and group displays: INCREASING: measured value increases at increasing output. DECREASING: measured value decreases at increasing output.	–

Terminal Description, Base part 1 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
15	CTRL	user	ANALOG	B(r)	**C**on**TR**o**L**. ANALOG: analog output signal. ON-OFF: three position control by two logical output signals.	Logical output requires the use of CONPU1. When CTRL=ON-OFF the actuator position and the dead zone are presented on the object display.

Base part 2



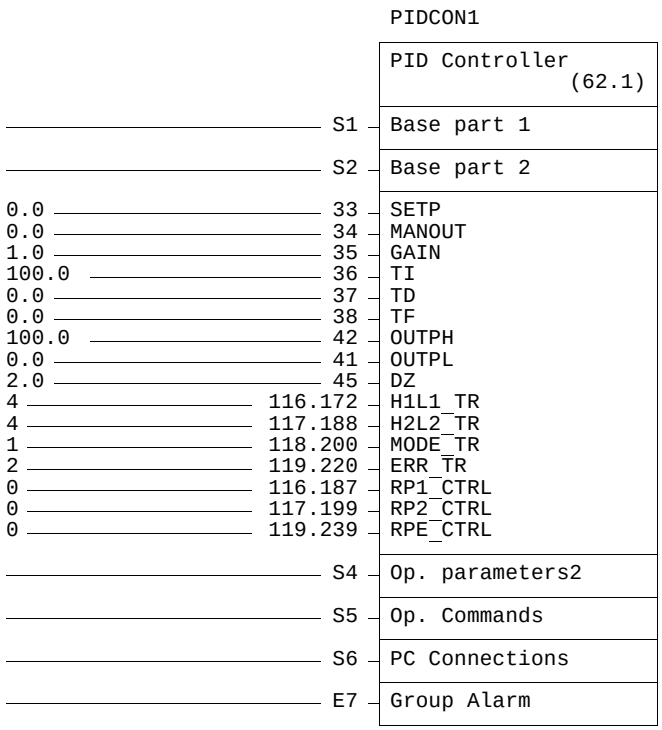
Terminal Description, Base part 2

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
20	E1NAME	user	–	–	**NAME** of **E**xternal reference **1**.	The text entered here will be presented in the object display under ”CONTROL MODE”. Maximum 20 characters.
21	E2NAME	user	–	–	**NAME** of **E**xternal reference **2**.	The text entered here will be presented in the object display under ”CONTROL MODE”. Maximum 20 characters.

Terminal Description, Base part 2 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
22	E3NAME	user	–	–	**NAME** of **E**xternal reference **3**.	The text entered here will be presented in the object display under ”CONTROL MODE”. Maximum 20 characters.

Operators parameters1



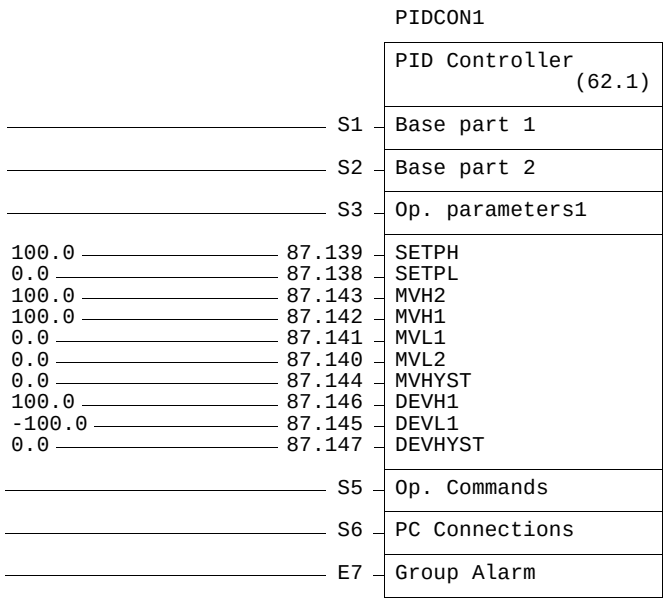
Terminal Description, Operators parameters1

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
33	SETP	dialog	0.0	R(r/w)	Auto **SETP**oint.	–
34	MANOUT	dialog	0.0	R(r/w)	**MAN**ual **OUT**put.	–
35	GAIN	dialog	1.0	R(r/w)	**GAIN** value.	–

Terminal Description, Operators parameters1 (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
36	TI	dialog	100.0	R(r/w)	**I**ntegration **T**ime (reset time) in seconds.	–
37	TD	dialog	0.0	R(r/w)	**D**ifferential **T**ime in seconds.	–
38	TF	dialog	0.0	R(r/w)	**F**ilter **T**ime constant for derivative part in seconds.	–
42	OUTPH	dialog	100.0	R(r/w)	**OUTP**ut **H**igh limit (%).	–
41	OUTPL	dialog	0.0	R(r/w)	**OUTP**ut **L**ow limit (%).	–
45	DZ	dialog	2.0	R(r/w)	**D**ead **Z**one (%).	Read by CON-PU1 when used.
116.172	H1L1_TR	user	4	–	Alarm **H1** and **L1 TR**eatment. Instance number of the data base element Event Treat located in Operator Station and defining event treatment of the alarms H1, L1 and control deviation.	–
117.188	H2L2_TR	user	4	–	Alarm **H2** and **L2 TR**eatment. Instance number of the data base element Event Treat located in Operator Station and defining event treatment of the alarms H2 and L2.	–
118.200	MODE_TR	user	1	–	**MODE TR**eatment. Instance number of the data base element Event Treat located in Operator Station and defining event treatment of PC-controlled control modes.	–
119.220	ERR_TR	user	2	–	**ERR**or **TR**eatment. Instance number of the data base element Event Treat located in Operator Station and defining event treatment of signal error in the analog input connected to the controller.	–
116.187	RP1_CTRL	user	0	–	**R**e**P**eat fail **C**on**TR**o**L** for alarms H**1** and L**1**. Blocking of repeating H1 and L1 alarms.	–
117.199	RP2_CTRL	user	0	–	**R**e**P**eat fail **C**on**TR**o**L** for alarms H**2** and L**2**. Blocking of repeating H2 and L2 alarms.	–
119.239	RPE_CTRL	user	0	–	**R**e**P**eat fail **C**on**TR**o**L** for signal **E**rror. Blocking of repeating signal error in the analog input connected to the controller.	–

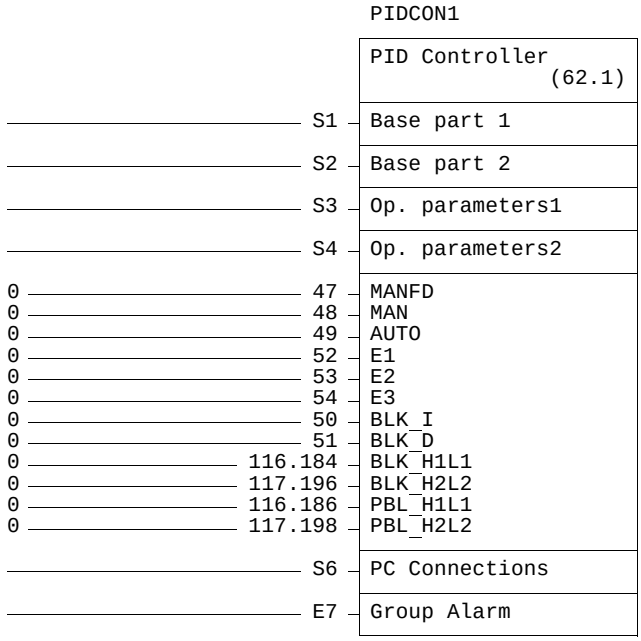
Operators parameters2



Terminal Description, Operators parameters2

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
87.139	SETPH	dialog	100.0	R(r/w)	**H**igh limit of **SETP**oint.	–
87.138	SETPL	dialog	0.0	R(r/w)	**L**ow limit of **SETP**oint.	–
87.143	MVH2	dialog	100.0	R(r/w)	Alarm limit **H2** of **M**easured **V**alue.	–
87.142	MVH1	dialog	100.0	R(r/w)	Alarm limit **H1** of **M**easured **V**alue.	–
87.141	MVL1	dialog	0.0	R(r/w)	Alarm limit **L1** of **M**easured **V**alue.	–
87.140	MVL2	dialog	0.0	R(r/w)	Alarm limit **L2** of **M**easured **V**alue.	–
87.144	MVHYST	dialog	0.0	R(r/w)	**HYST**eresis for alarm limits of **M**easured **V**alue.	–
87.146	DEVH1	dialog	100.0	R(r/w)	**H**igh alarm limit **1** for control **DEV**iation (%).	–
87.145	DEVL1	dialog	–100.0	R(r/w)	**L**ow alarm limit **1** for control **DEV**iation (%).	–
87.147	DEVHYST	dialog	0.0	R(r/w)	**HYST**eresis for alarm limits for **DEV**iation.	–

Operators Commands



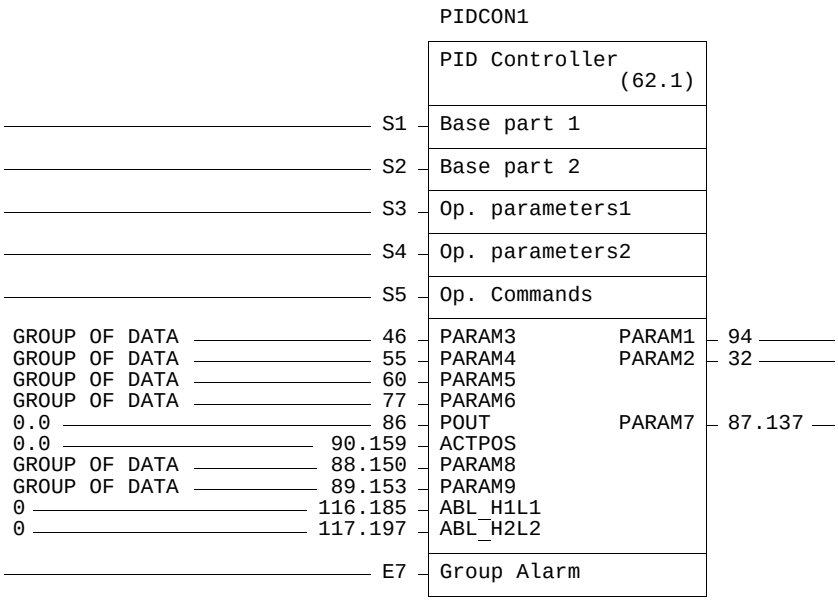
Terminal Description, Operators Commands

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
47	MANFD	dialog	0	B(r)	**MAN**ual **F**orce**D** mode.	–
48	MAN	dialog	0	B(r)	**MAN**ual mode.	Converted to a pulse by the system.
49	AUTO	dialog	0	B(r)	**AUTO**matic mode.	Converted to a pulse by the system.
52	E1	dialog	0	B(r)	**E**xternal mode **1** (Setpoint).	Converted to a pulse by the system.
53	E2	dialog	0	B(r)	**E**xternal mode **2** (Setpoint).	Converted to a pulse by the system.
54	E3	dialog	0	B(r)	**E**xternal mode **3** (Output).	–
50	BLK_I	dialog	0	B(r)	**BL**oc**K** **I**ntegral part.	–
51	BLK_D	dialog	0	B(r)	**BL**oc**K** **D**erivative part.	–
116.184	BLK_H1L1	dialog	0	–	**BL**oc**K** alarms **H1** and **L1**.	–
117.196	BLK_H2L2	dialog	0	–	**BL**oc**K** alarms **H2** and **L2**.	–

Terminal Description, Operators Commands (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
116.186	PBL_H1L1	dialog	0	–	**BL**ock **P**rinter for **H1** and **L1** alarms. Blocking of printer for H1, L1 and control deviation alarms.	–
117.198	PBL_H2L2	dialog	0	–	**BL**ock **P**rinter for **H2** and **L2** alarms. Blocking of printer for H2and L2 alarms.	–

PC Connections



Terminal Description, PC Connections

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
46	PARAM3	PC	–	I(r/w)	Group of data to be connected to the PC element connections **PARAM3**A and **PARAM3**B.	–
55	PARAM4	PC	–	I(r/w)	Group of data to be connected to the PC element connection **PARAM4**.	–
60	PARAM5	PC	–	IL(r/w)	Group of data to be connected to the PC element connection **PARAM5**.	–

Terminal Description, PC Connections (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
77	PARAM6	PC	–	A32(r/w)	Group of data to be connected to the PC element connection **PARAM6**.	–
86	POUT	PC	0.0	R(r/w)	To be connected to the PC element connection **OUTP**.	–
90.159	ACTPOS	PC	0.0	R(r/w)	To be connected to the AI channel measuring the **ACT**uator **POS**ition (Transferred by a PC-element).	The value will be presented in the object display if CTRL=ON-OFF. If CTRL=ANALOG, then ACTPOS is not used.
88.150	PARAM8	PC	–	A8 (r/w)	Group of data to be connected to the PC element connection **PARAM 8** if C5=1.	–
88.153	PARAM9	PC	–	A16(r/w)	Group of data to be connected to the PC element connection **PARAM9** if C6=1.	–
116.185	ABL_H1L1	PC	0	B(r/w)	**A**uto **BL**ock alarms **H1** and **L1**.	See section Application Example in functional description.
117.197	ABL_H2L2	PC	0	B(r/w)	**A**uto **BL**ock alarms **H2** and **L2**.	See section Application Example in functional description.
94	PARAM1	system	–	I(r/w)	Group of data to be connected to the PC element connection **PARAM1**.	–
32	PARAM2	system	–	A48 (r/w)	Group of data to be connected to the PC element connection **PARAM2**.	–
87.137	PARAM7	system	–	A48 (r/w)	Group of data to be connected to the PC element connection **PARAM7** if C4=1.	–

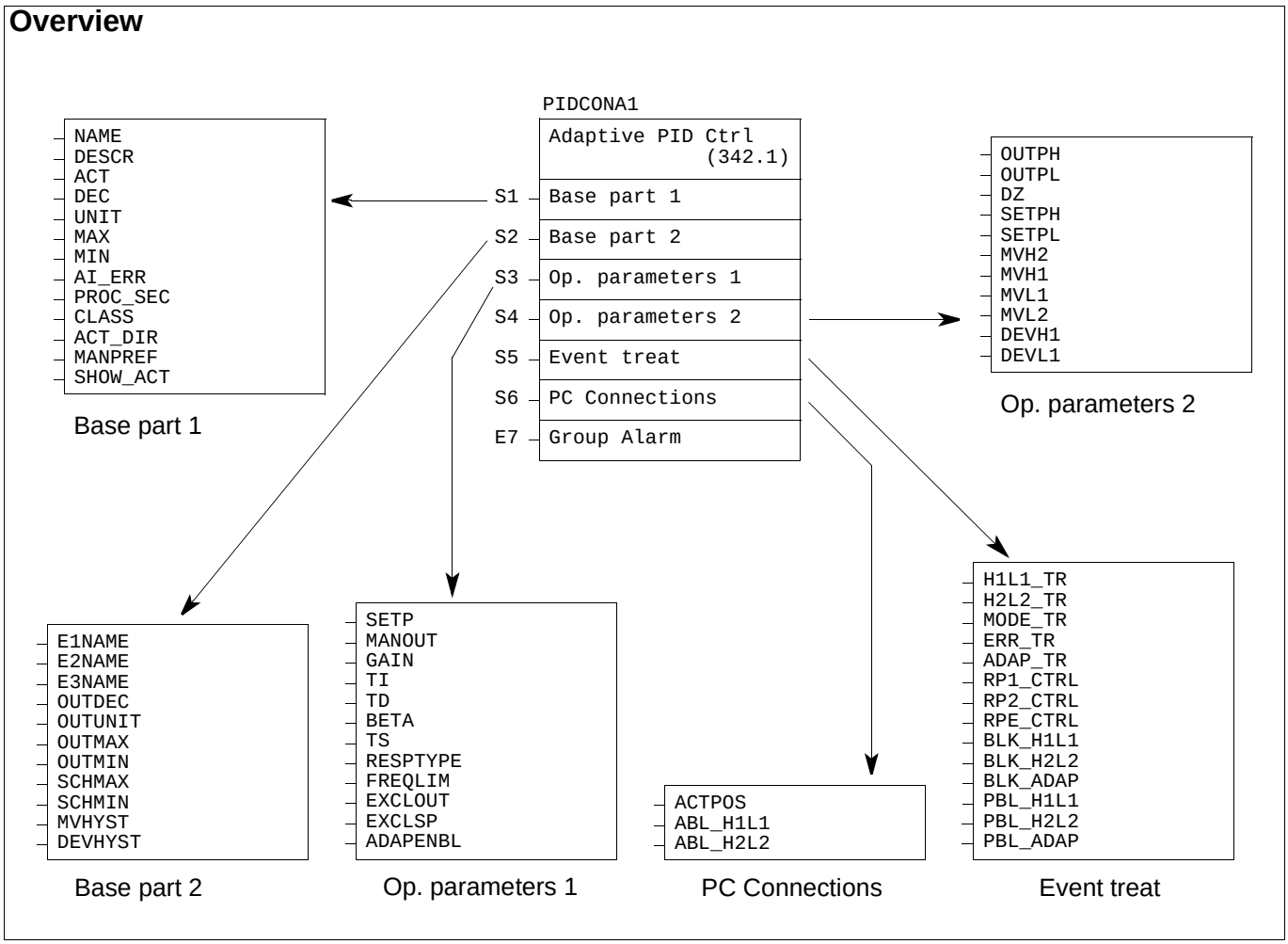
Adaptive PID Ctrl PIDCONA

Summary

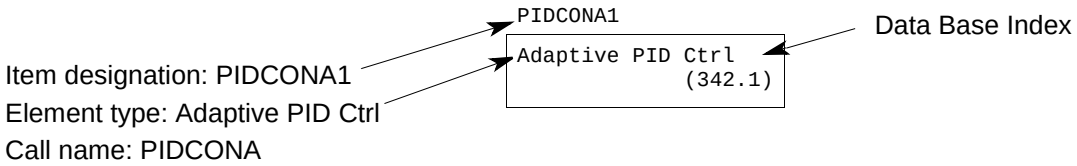
The Adaptive PID control data base element is part of the functional unit PIDCONA. It is used to set up the functions and the presentation for the operator station, such as names, ranges, units, and alarm handling. Initial values can be specified for some of the parameters that are normally entered via operator station dialog. The element also provides an interface between the operator station functions and the PC program during normal operation.

For information about the extension part Group Alarm, see data base element GRPMEMB.

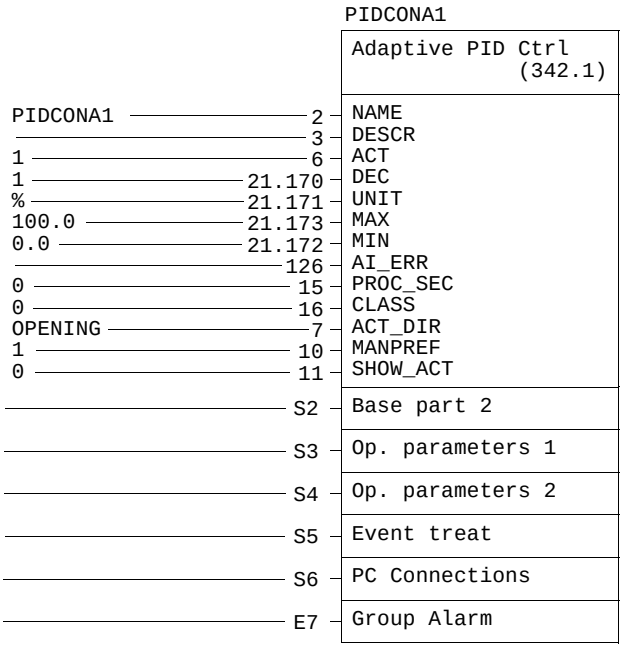
Overview



Head



Base part 1



Terminal Description, Base part 1

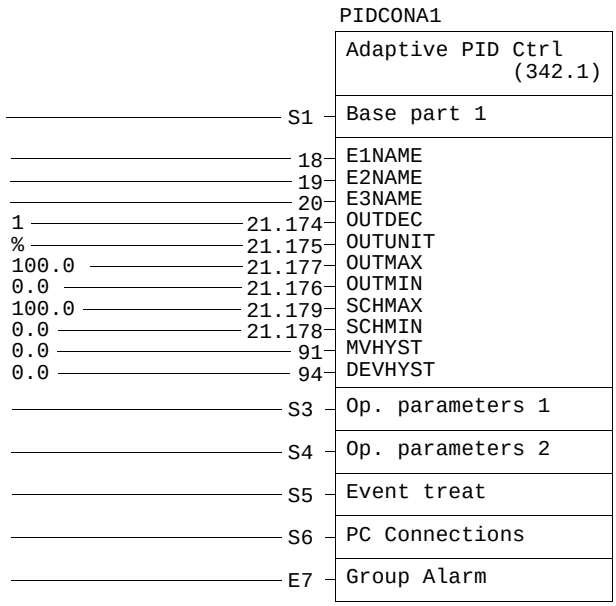
Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
2	NAME	user	PIDCONA x	–	Unique **NAME** of process controller (e.g. TICA107) where x=instance number.	–
3	DESCR	user	–	–	This **DESCR**iption of the Controller will be shown in operator station.	–
6	ACT	user	1	B(r/w)	1=the operator communication is **ACT**ive.	–

Terminal Description, Base part 1 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
21.170	DEC	user	1	–	The number of **DEC**imals for measured value and its alarm limits, for set points and their limits, and for range min and range max.	0 - 6 decimals.
21.171	UNIT	user	%	A6(r)	The **UNIT** of the measured value and set point in engineering unit.	–
21.173	MAX	user	100.0	R(r/w)	The **MAX**imum value of the measuring range.	(1)
21.172	MIN	user	0.0	R(r/w)	The **MIN**imum value of the measuring range.	(1)
126	AI_ERR	user	–	–	**AI ERR**or. Reference to the Analog Input element which is used for the measured value.	Connects error flag in the analog input to PIDCONA. E.g. FT 107. An initiation must be made in the Advant Controller 400 Series system before the change is accomplished.
15	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
16	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station	–
7	ACT_DIR	user	OPENING	B(r/w)	**ACT**uator **DIR**ection. Used for presentation in the object and group displays. OPENING=actuator open at 100% output. CLOSING=actuator closed at 100% output.	–
10	MANPREF	user	1	B(r)	Presently unused. Reserved for future use.	–
11	SHOW_ACT	user	0	B(r/w)	**SHOW ACT**uator position (bar graph and value) in displays.	–

(1) MIN < MAX is required.

Base part 2



Terminal Description, Base part 2

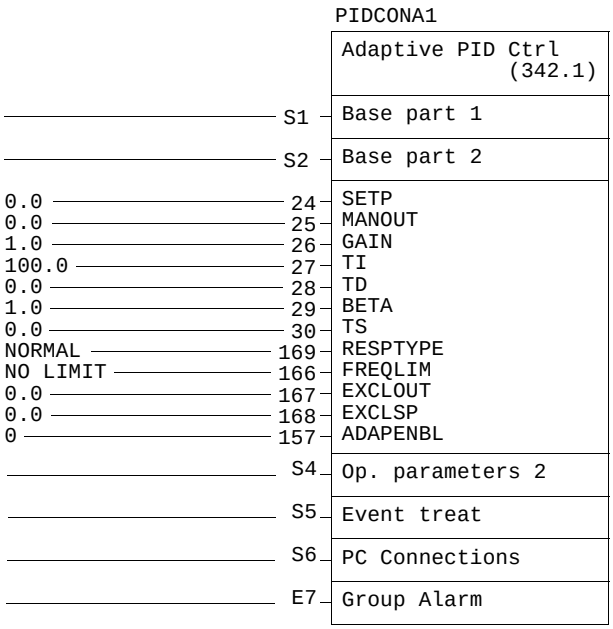
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
18	E1NAME	user	–	–	**NAME** of mode **E1** shown in the object display.	Max. 20 characters.
19	E2NAME	user	–	–	**NAME** of mode **E2** shown in the object display.	Max. 20 characters.
20	E3NAME	user	–	–	**NAME** of mode **E3** shown in the object display.	Max. 20 characters.
21.174	OUTDEC	user	1	–	The number of **DEC**imals for **OUT**put and its alarm limits and range min and range max.	–
21.175	OUTUNIT	user	%	A6(r)	The **UNIT** of the **OUT**put value in engineering unit.	–
21.177	OUTMAX	user	100.0	R(r/w)	The **MAX**imum value of the **OUT**put range.	(1)
21.176	OUTMIN	user	0.0	R(r/w)	The **MIN**imum value of the **OUT**put range.	(1)
21.179	SCHMAX	user	100.0	R(r/w)	The **MAX**imum value of the **SCH**ed in range.	(2)

Terminal Description, Base part 2 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
21.178	SCHMIN	user	0.0	R(r/w)	The **MIN**imum value of the **SCH**ed in range.	(2)
91	MVHYST	user	0.0	R(r/w)	**HYST**eresis for alarm limits of **M**easured **V**alue.	≥0
94	DEVHYST	user	0.0	R(r/w)	**HYST**eresis for alarm limits for **DEV**iation.	≥0

(1) OUTMIN < OUTMAX is required.
(2) SCHMIN < SCHMAX is required.

Op. parameters 1



Terminal Description, Op. parameters 1

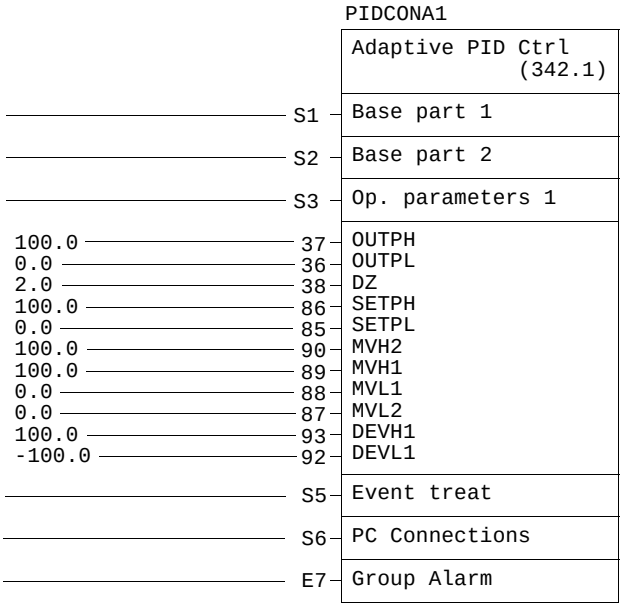
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
24	SETP	dialog	0.0	R(r/w)	Auto **SETP**oint.	–
25	MANOUT	dialog	0.0	R(r/w)	**MAN**ual **OUT**put.	–

Terminal Description, Op. parameters 1 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
26	GAIN	system/ dialog	1.0	R(r/w)	**GAIN** value.	–
27	TI	system/ dialog	100.0	R(r/w)	**I**ntegration **T**ime in seconds.	≥0
28	TD	system/ dialog	0.0	R(r/w)	**D**erivation **T**ime in seconds.	≥0
29	BETA	system/ dialog	1.0	R(r/w)	Setpoint factor (**BETA**) in P part.	≥0
30	TS	system/ dialog	0.0	–	**S**ampling **T**ime (period) in seconds.	≥0
169	RESPTYPE	dialog	NORMAL	–	**RESP**onse **TYPE**. EXTRA FAST, FAST, NORMAL, DAMPED, EXTRA DAMPED	–
166	FREQLIM	dialog	NO LIMIT	–	Maximum speed of dominant poles. “No limit” is shown for values 10^6 or greater, other values numerically. “No limit” entered results in 10^6 being stored.	>0
167	EXCLOUT	dialog	0.0	–	**EXC**itation **L**evel for the **OUT**put. (1)	≥0
168	EXCLSP	dialog	0.0	–	**EXC**itation **L**evel for the **S**et**P**oint. (2)	≥0
157	ADAPENBL	dialog	0	–	**ADAP**tation **EN**a**BL**ed flag.	–

(1) 0 is interpreted as the default, which is 3% of output range OUTMAX-OUTMIN. Positive values are the level in engineering units.
(2) 0 is interpreted as the default, which is 3% of measured value range MAX-MIN. Positive values are the level in engineering units.

Op. parameters 2



Terminal Description, Op. parameters 2

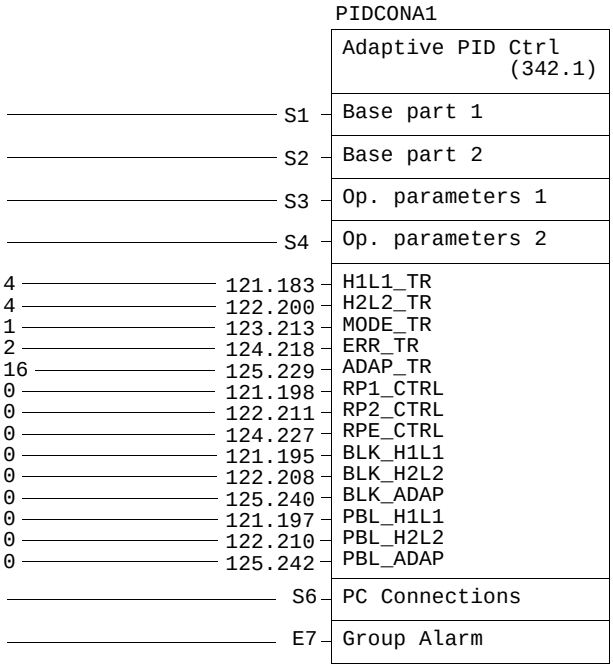
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
37	OUTPH	dialog	100.0	R(r/w)	**OUTP**ut **H**igh limit.	(1)
36	OUTPL	dialog	0.0	R(r/w)	**OUTP**ut **L**ow limit.	(1)
38	DZ	dialog	0.0	R(r/w)	**D**ead **Z**one (%). When a three point controller CON-PU1 is used, it can get its deadzone from this terminal. The value is also an adaption deadzone for the PIDCONA output. No adaption when the output varies less.	≥0
86	SETPH	dialog	100.0	R(r/w)	**H**igh limit of **SETP**oint.	(2)
85	SETPL	dialog	0.0	R(r/w)	**L**ow limit of **SETP**oint.	(2)
90	MVH2	dialog	100.0	R(r/w)	Alarm limit **H2** of **M**easured **V**alue.	(3)
89	MVH1	dialog	100.0	R(r/w)	Alarm limit **H1** of **M**easured **V**alue.	(3)
88	MVL1	dialog	0.0	R(r/w)	Alarm limit **L1** of **M**easured **V**alue.	(3)
87	MVL2	dialog	0.0	R(r/w)	Alarm limit **L2** of **M**easured **V**alue.	(3)
93	DEVH1	dialog	100.0	R(r/w)	**H**igh alarm limit **1** for control **DEV**iation.	(4)

Terminal Description, Op. parameters 2 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
92	DEVL1	dialog	–100.0	R(r/w)	**L**ow alarm limit **1** for control **DEV**iation.	(4)

(1) OUTPL ≤ OUTPH is required.
(2) SETPL ≤ SETPH is required.
(3) MVL2 ≤ MVL1 ≤ MVH1 ≤ MVH2 is required.
(4) DEVL1 ≤ DEVH1 is required.

Event treat



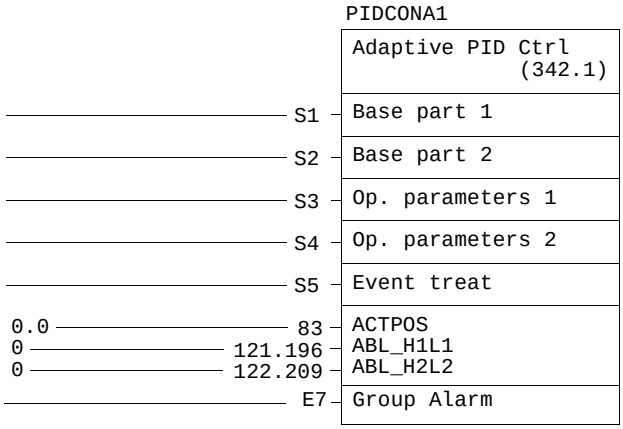
Terminal Description, Event treat

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
121.183	H1L1_TR	user	4	–	Alarm **H1** and **L1 TR**eatment. Instance number of the data base element Event Treat located in the operator station and defining event treatment of the alarms H1, L1, and control deviation.	–

Terminal Description, Event treat (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
122.200	H2L2_TR	user	4	–	Alarm **H2** and **L2 TR**eatment. Instance number of the data base element Event Treat located in the operator station and defining event treatment of the alarms H2 and L2.	–
123.213	MODE_TR	user	1	–	**MODE TR**eatment. Instance number of the data base element Event Treat located in the operator station and defining event treatment of the control mode changes done by the PC program.	–
124.218	ERR_TR	user	2	–	**ERR**or **TR**eatment. Instance number of the data base element Event Treat located in the operator station and defining event treatment of signal error in the connected analog input channel (AI–ERR).	–
125.229	ADAP_TR	user	16	–	**ADAP**tion **TR**eatment. Instance number of the data base element Event Treat located in the operator station and defining event treatment of adaption errors.	–
121.198	RP1_CTRL	user	0	–	**R**e**P**eat fail **C**on**TR**o**L** for alarms H**1** and L1. Blocking of repeating H1 and L1 alarms.	–
122.211	RP2_CTRL	user	0	–	**R**e**P**eat fail **C**on**TR**o**L** for alarms H**2** and L2. Blocking of repeating H2 and L2 alarms.	–
124.227	RPE_CTRL	user	0	–	**R**e**P**eat fail **C**on**TR**o**L** for blocking **E**rror. Blocking of repeating signal error in the analog input connected to the controller	–
121.195	BLK_H1L1	dialog	0	–	**BL**oc**K** the alarms **H1**, **L1** and control deviation.	–
122.208	BLK_H2L2	dialog	0	–	**BL**oc**K** the alarms **H2** and **L2**.	–
125.240	BLK_ADAP	user	0	–	**BL**oc**K** the **ADAP**tion alarms.	–
121.197	PBL_H1L1	dialog	0	–	**BL**ock the **P**rinting of **H1**, **L1** and control deviation alarms.	–
122.210	PBL_H2L2	dialog	0	–	**BL**ock the **P**rinting of **H2** and **L2** alarms.	–
125.242	PBL_ADAP	user	0	–	**BL**ock the **P**rinting of **ADAP**tion alarms.	–

PC Connections



Terminal Description, PC Connections

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
83	ACTPOS	PC	0.0	R(r/w)	To be connected to the AI channel measuring the **ACT**uator **POS**ition (Transferred by a PC element).	The value will be shown in the object display if SHOW_ACT=1.
121.196	ABL_H1L1	PC	0	B(r/w)	**A**uto **BL**ock alarms **H1** and **L1**.	–
122.209	ABL_H2L2	PC	0	B(r/w)	**A**uto **BL**ock alarms **H2** and **L2**.	–

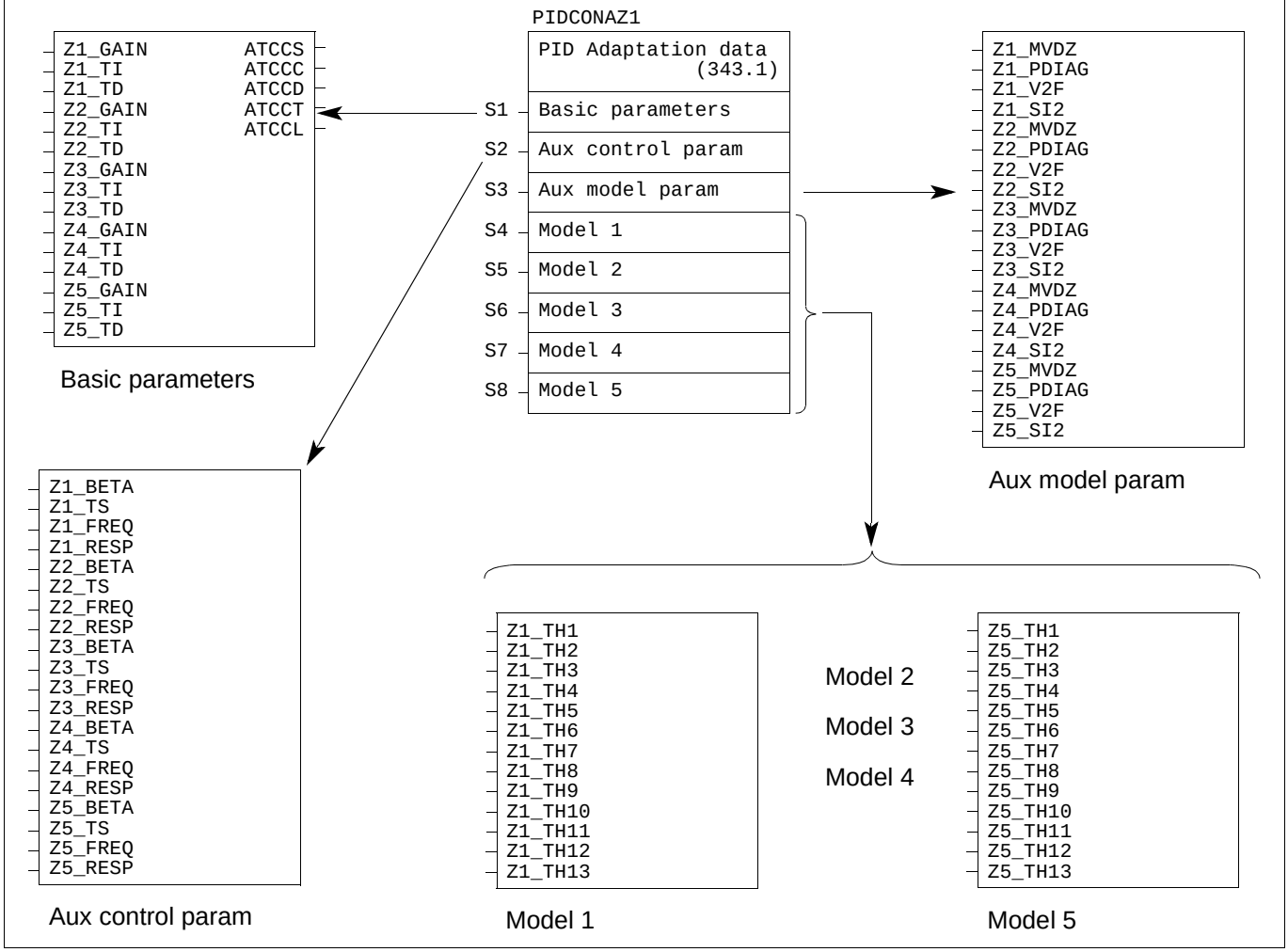
PID Adaptation data PIDCONAZ

Summary

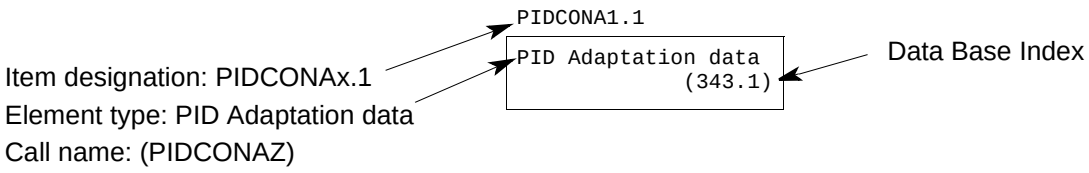
There are no values to be entered by the user in this data base element. It is subordinated to the Adaptive PID Ctrl data base element.

Saved parameters for the five different gain scheduling zones are available in the element PID Adaptation data, in order to be retained during source code dumping and loading. The well known controller parameters are gathered in the part Basic parameters together with terminals holding completion codes for the latest autotuning. For example, if an autotuning was completed successfully without any operator intervention, the ATCCS terminal of the data base element will show the string SVV. The other completion code terminals give further information about autotuning.

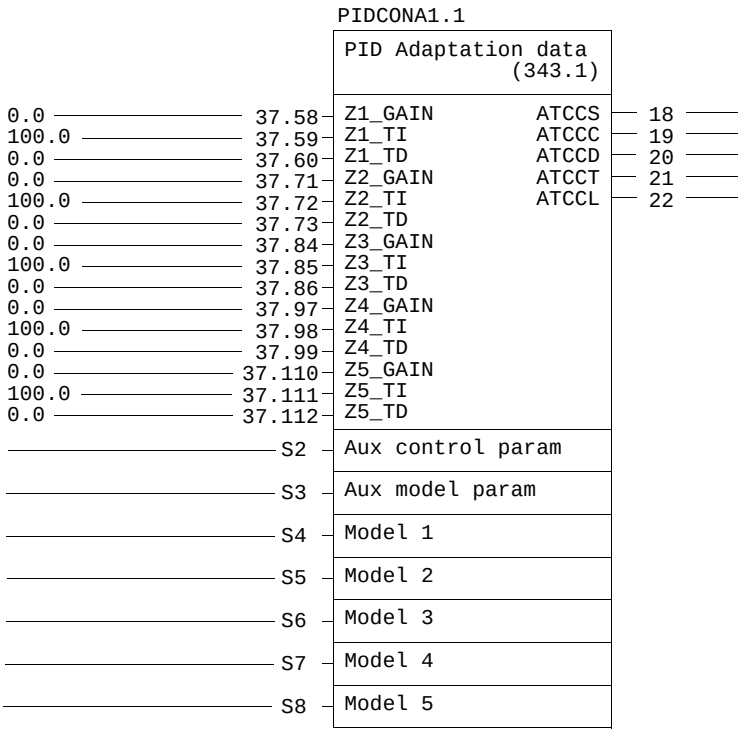
Overview



Head



Basic parameters



Terminal Description, Basic parameters

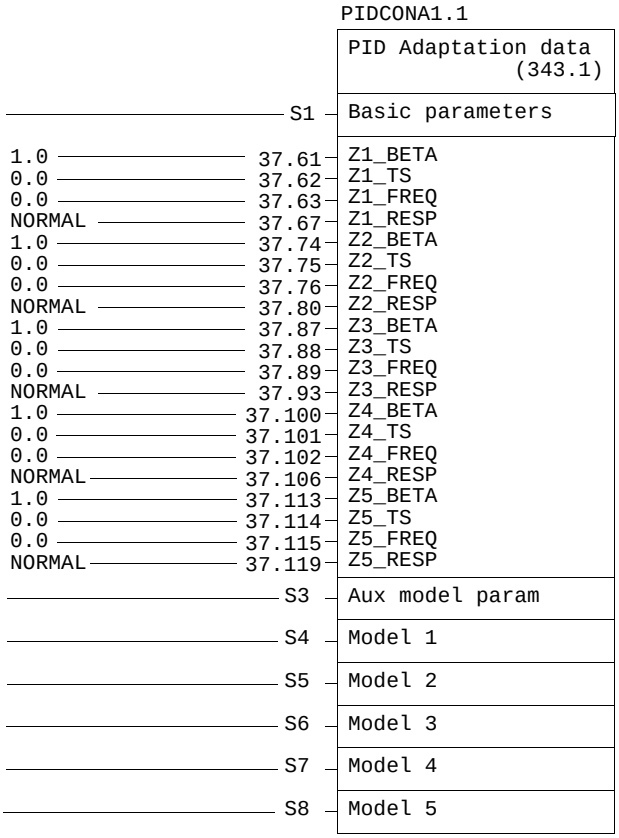
Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
37.58	Z1_GAIN	system	0.0	–	**GAIN** saved in **Z**one **1**.	(1)
37.59	Z1_TI	system	100.0	–	**TI** saved in **Z**one **1**.	≥0
37.60	Z1_TD	system	0.0	–	**TD** saved in **Z**one **1**.	≥0
37.71	Z2_GAIN	system	0.0	–	**GAIN** saved in **Z**one **2**.	(1)

Terminal Description, Basic parameters (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
37.72	Z2_TI	system	100.0	–	**TI** saved in **Z**one **2**.	≥0
37.73	Z2_TD	system	0.0	–	**TD** saved in **Z**one **2**.	≥0
37.84	Z3_GAIN	system	0.0	–	**GAIN** saved in **Z**one **3**.	(1)
37.85	Z3_TI	system	100.0	–	**TI** saved in **Z**one **3**.	≥0
37.86	Z3_TD	system	0.0	–	**TD** saved in **Z**one **3**.	≥0
37.97	Z4_GAIN	system	0.0	–	**GAIN** saved in **Z**one **4**.	(1)
37.98	Z4_TI	system	100.0	–	**TI** saved in **Z**one **4**.	≥0
37.99	Z4_TD	system	0.0	–	**TD** saved in **Z**one **4**.	≥0
37.110	Z5_GAIN	system	0.0	–	**GAIN** saved in **Z**one **5**.	(1)
37.111	Z5_TI	system	100.0	–	**TI** saved in **Z**one **5**.	≥0
37.112	Z5_TD	system	0.0	–	**TD** saved in **Z**one **5**.	≥0
18	ATCCS	system	–	–	**C**ompletion **C**ode of latest **A**uto**T**uning. **S**tatus. Three character code (using ASCII). 1st - How AT was started S=Start tune C=Continue tune 2nd - What ended AT M=Man forced or stop & restore A=Accept & save V=Verification successful F=AT Failed P=PC input aborted AT 3rd - AT ended in phase L=Listen R=Relay E=Excited adaptive control V=Verification	–
19	ATCCC	system	0	–	**C**ompletion **C**ode of latest **A**uto**T**uning. **C**ounter value when AT ended.	–
20	ATCCD	system	–	–	**C**ompletion **C**ode of latest **A**uto**T**uning. The **D**ate when the autotuning was started.	–
21	ATCCT	system	–	–	**C**ompletion **C**ode of latest **A**uto**T**uning. The **T**ime when the autotuning was started.	–
22	ATCCL	system	0	–	**C**ompletion **C**ode of latest **A**uto**T**uning. **L**ength in minutes.	–

(1) Zx_GAIN=0, indicates that no save has been done for zone x.

Aux control param



Terminal Description, Aux control param

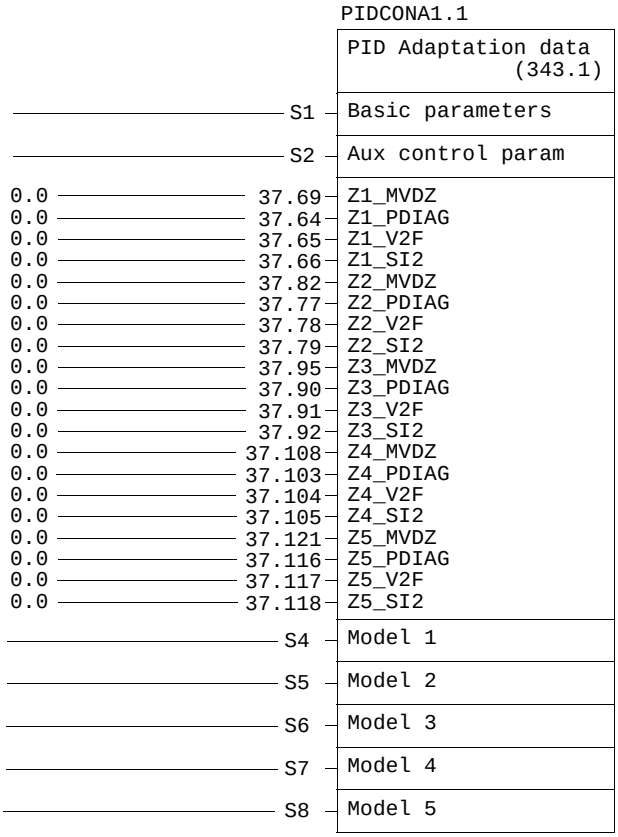
Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
37.61	Z1_BETA	system	1.0	–	**BETA** saved in **Z**one **1**.	≥0
37.62	Z1_TS	system	0.0	–	**TS** saved in **Z**one **1**.	≥0
37.63	Z1_FREQ	system	0.0	–	**FREQ**uency saved in **Z**one **1**.	≥0
37.67	Z1_RESP	system	NORMAL	–	**RESP**onse type saved in **Z**one **1**.	–
37.74	Z2_BETA	system	1.0	–	**BETA** saved in **Z**one **2**.	≥0
37.75	Z2_TS	system	0.0	–	**TS** saved in **Z**one **2**.	≥0
37.76	Z2_FREQ	system	0.0	–	**FREQ**uency saved in **Z**one **2**.	≥0
37.80	Z2_RESP	system	NORMAL	–	**RESP**onse type saved in **Z**one **2**.	–

Terminal Description, Aux control param (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
37.87	Z3_BETA	system	1.0	–	**BETA** saved in **Z**one **3**.	≥0
37.88	Z3_TS	system	0.0	–	**TS** saved in **Z**one **3**.	≥0
37.89	Z3_FREQ	system	0.0	–	**FREQ**uency saved in **Z**one **3**.	≥0
37.93	Z3_RESP	system	NORMAL	–	**RESP**onse type saved in **Z**one **3**.	–
37.100	Z4_BETA	system	1.0	–	**BETA** saved in **Z**one **4**.	≥0
37.101	Z4_TS	system	0.0	–	**TS** saved in **Z**one **4**.	≥0
37.102	Z4_FREQ	system	0.0	–	**FREQ**uency saved in **Z**one **4**.	≥0
37.106	Z4_RESP	system	NORMAL	–	**RESP**onse type saved in **Z**one **4**.	–
37.113	Z5_BETA	system	1.0	–	**BETA** saved in **Z**one **5**.	≥0
37.114	Z5_TS	system	0.0	–	**TS** saved in **Z**one **5**.	≥0
37.115	Z5_FREQ	system	0.0	–	**FREQ**uency saved in **Z**one **5**.	≥0
37.119	Z5_RESP	system	NORMAL	–	**RESP**onse type saved in **Z**one **5**.	–

The terminals Z1_RESP, Z2_RESP, Z3_RESP, Z4_RESP and Z5_RESP (the response types saved for the zones) are presented in the same manner as the terminal RESTYPE of the data base element Adaptive PID control.

Aux model param



Terminal Description, Aux model param

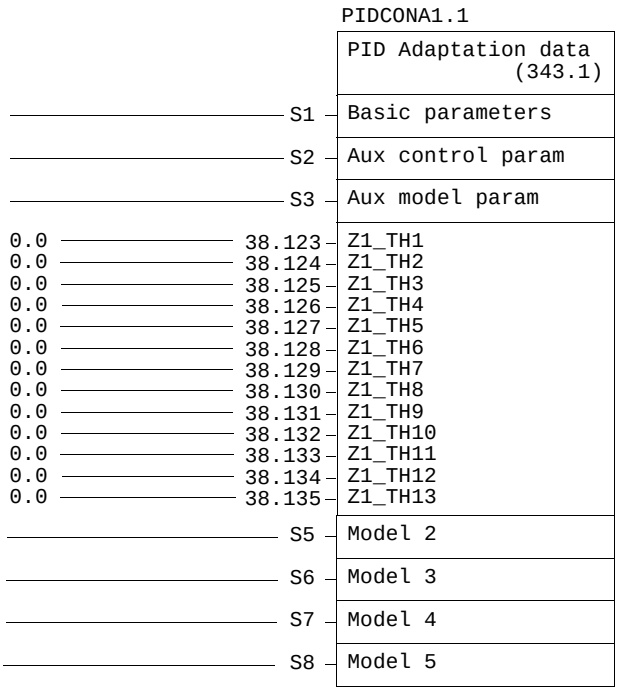
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
37.69	Z1_MVDZ	system	0.0	–	**MV** Adaptation **D**ead**Z**one (%) in **Z**one **1**. No adaptation when the measured value varies less.	≥0
37.64	Z1_PDIAG	system	0.0	–	Adaptation data saved in **Z**one **1**.	≥0 (1)
37.65	Z1_V2F	system	0.0	–	Adaption data saved in **Z**one **1**.	≥0
37.66	Z1_SI2	system	0.0	–	Adaption data saved in **Z**one **1**.	≥0
37.82	Z2_MVDZ	system	0.0	–	**MV** Adaptation **D**ead**Z**one (%) in **Z**one **2**. No adaptation when the measured value varies less.	≥0

Terminal Description, Aux model param (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
37.77	Z2_PDIAG	system	0.0	–	Adaptation data saved in **Z**one **2**.	≥0 (1)
37.78	Z2_V2F	system	0.0	–	Adaption data saved in **Z**one **2**.	≥0
37.79	Z2_SI2	system	0.0	–	Adaption data saved in **Z**one **2**.	≥0
37.95	Z3_MVDZ	system	0.0	–	**MV** Adaptation **D**ead**Z**one (%) in **Z**one **3**. No adaptation when the measured value varies less.	≥0
37.90	Z3_PDIAG	system	0.0	–	Adaption data saved in **Z**one **2**.	≥0 (1)
37.91	Z3_V2F	system	0.0	–	Adaption data saved in **Z**one **2**.	≥0
37.92	Z3_SI2	system	0.0	–	Adaption data saved in **Z**one **3**.	≥0
37.108	Z4_MVDZ	system	0.0	–	**MV** Adaptation **D**ead**Z**one (%) in **Z**one **4**. No adaptation when the measured value varies less.	≥0
37.103	Z4_PDIAG	system	0.0	–	Adaption data saved in **Z**one **4**.	≥0 (1)
37.104	Z4_V2F	system	0.0	–	Adaption data saved in **Z**one **4**.	≥0
37.105	Z4_SI2	system	0.0	–	Adaption data saved in **Z**one **4**.	≥0
37.121	Z5_MVDZ	system	0.0	–	**MV** Adaptation **D**ead**Z**one (%) in **Z**one **5**. No adaptation when the measured value varies less.	≥0
37.116	Z5_PDIAG	system	0.0	–	Adaption data saved in **Z**one **5**.	≥0 (1)
37.117	Z5_V2F	system	0.0	–	Adaption data saved in **Z**one **5**.	≥0
37.118	Z5_SI2	system	0.0	–	Adaption data saved in **Z**one **5**.	≥0

(1) Zx_PDIAG=0, indicates that there is no model saved in zone x.

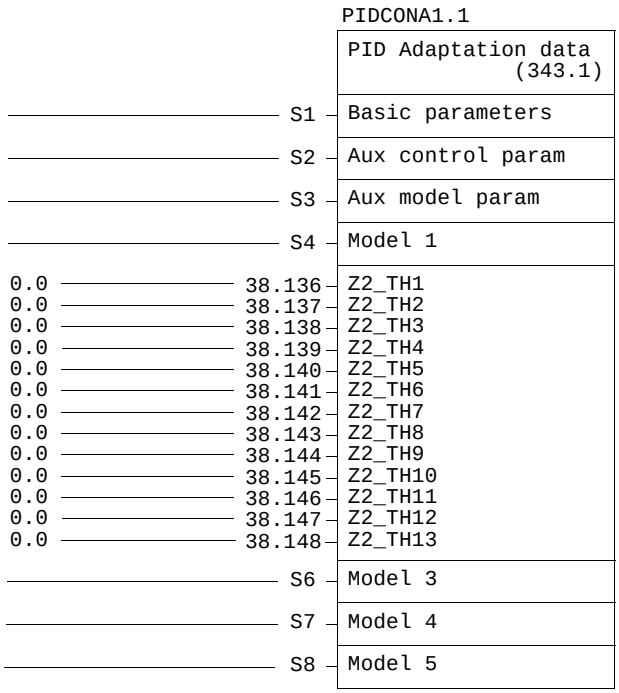
Model 1



Terminal Description, Model 1

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
38.123	Z1_TH1	system	0.0	–	Model value saved in **Z**one **1**.	–
38.124	Z1_TH2	system	0.0	–	Model value saved in **Z**one **1**.	–
:	:	:	:	:	:	:
38.135	Z1_TH13	system	0.0	–	Model value saved in **Z**one **1**.	–

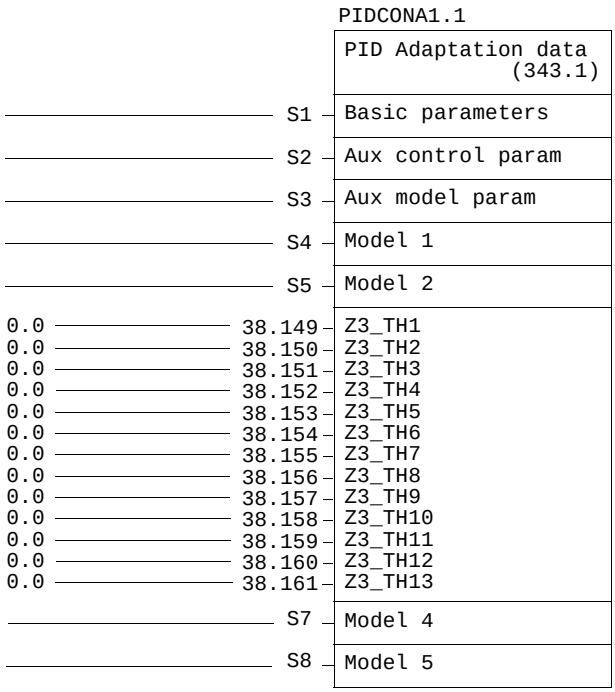
Model 2



Terminal Description, Model 2

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
38.136	Z2_TH1	system	0.0	–	Model value saved in **Z**one **2**.	–
38.137	Z2_TH2	system	0.0	–	Model value saved in **Z**one **2**.	–
:	:	:	:	:	:	:
38.148	Z2_TH13	system	0.0	–	Model value saved in **Z**one **2**.	–

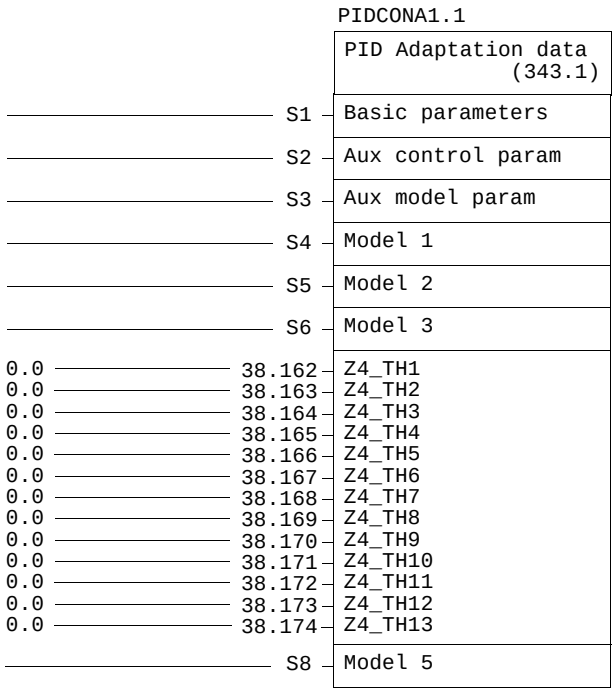
Model 3



Terminal Description, Model 3

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
38.149	Z3_TH1	system	0.0	–	Model value saved in **Z**one **3**.	–
38.150	Z3_TH2	system	0.0	–	Model value saved in **Z**one **3**.	–
:	:	:	:	:	:	:
38.161	Z3_TH13	system	0.0	–	Model value saved in **Z**one **3**.	–

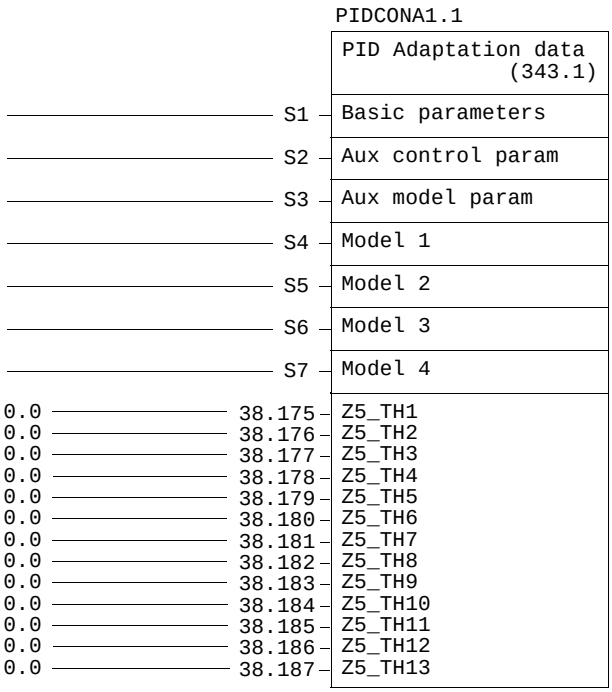
Model 4



Terminal Description, Model 4

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
38.162	Z4_TH1	system	0.0	–	Model value saved in **Z**one **4**.	–
38.163	Z4_TH2	system	0.0	–	Model value saved in **Z**one **4**.	–
:	:	:	:	:	:	:
38.174	Z4_TH13	system	0.0	–	Model value saved in **Z**one **4**.	–

Model 5



Terminal Description, Model 5

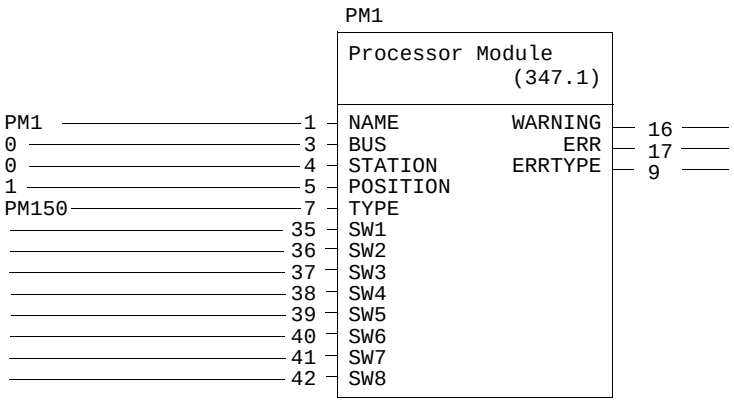
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
38.175	Z5_TH1	system	0.0	–	Model value saved in **Z**one **5**.	–
38.176	Z5_TH2	system	0.0	–	Model value saved in **Z**one **5**.	–
:	:	:	:	:	:	:
38.187	Z5_TH13	system	0.0	–	Model value saved in **Z**one **5**.	–

Processor Module PM150

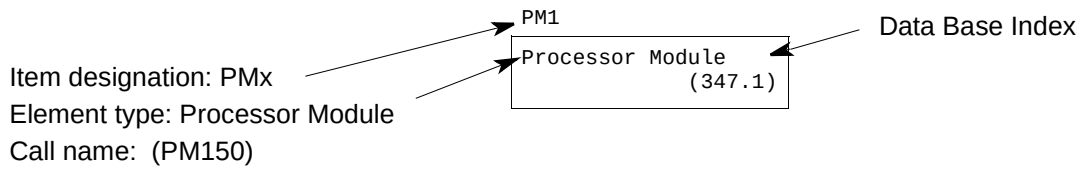
Summary

This Processor Module data base element represents the processor module in Advant Controller 410. The element also represents the system software program card inserted in PM150. The element is used for the processor modules PM150 and PM150V (PM150V04 or PM150V08).

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	PMx	–	Unique **NAME** of the element.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
3	BUS	predef	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
4	STATION	predef	0	–	**STATION**. Part of Address.	
5	POSITION	predef	1	–	**POSITION**. Part of Address. Always 1.	
7	TYPE	predef	PM150	–	**TYPE** designation of the hardware module.	PM150 is used for both PM150 and PM150V (PM150V04 or PM150V08.
35	SW1		–	–		Not used.
:	:	:	:	:	:	:
42	SW8		–	–		Not used.
16	WARNING	system	0	B(r)	**WARNING** flag indicating non-fatal errors.	–
17	ERR	system	0	B(r)	**ERR**or flag indicating hardware or configuration error.	–
9	ERRTYPE	system	H’0	I(r)	**ERR**or **TYPE**.	See Error handling.

Function

You can not modify any terminal of the data base element PM150.

The main function of the element is:

- To indicate where in the subrack the hardware PM150 is placed.
  This is always in position 1, the left-most position in the subrack.

Error handling

WARNING Warning.

ERR Error.

ERRTYPE Error type.

Bit pattern, default B 0000 0000 0000 0000.

Bit 0 is at the right-hand side.

Bit 15 is at the left-hand side.

Bits 0-7, supervision of processor:

ERRTYPE	Error
0	Warning
1	1-bit correction in RAM of PM150
2-7	*Not used*

Bits 8-15, supervision of program card:

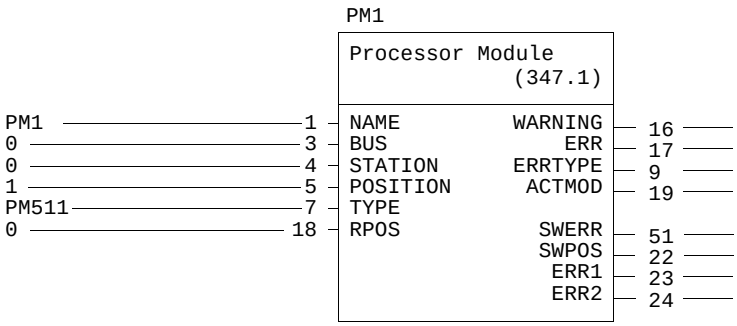
ERRTYPE	Error
8	Warning
9	Error
10	Not original card
11	Checksum error
12	Card missing
13	Supervision not active
14	Initial check in progress
15	*Not used*

Processor Module PM511

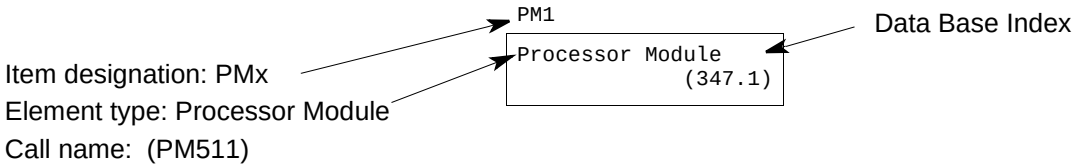
Summary

This Processor Module data base element represents the processor module in Advant Controller 450 with built-in program card. When using redundant processor modules, the element also represents the redundant configuration. The element is used for the processor module PM511V (PM511V08 or PM511V16).

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	PMx	–	Unique **NAME** of the element.	–
3	BUS	predef	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
4	STATION	predef	0	–	**STATION**. Part of Address.	
5	POSITION	predef	1	–	**POSITION**. Part of Address. Always 1.	

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
7	TYPE	predef	PM511	–	**TYPE** designation of the hardware module.	PM511 is used for PM511V (PM511V08 or PM511V16).
18	RPOS	system	0	–	**POS**ition of **R**ightmost PM511 when using redundant processor modules. Possible values: 0 and 2.	Same validation as for POSITION.
16	WARNING	system	0	B(r)	**WARNING** flag indicating non-fatal errors.	–
17	ERR	system	0	B(r)	**ERR**or flag indicating hardware or configuration error.	–
9	ERRTYPE	system	H'0	I(r)	**ERR**or **TYPE**.	See Error Handling.
19	ACTMOD	system	1	I(r)	**ACT**ive processor **MOD**ule when using redundant processor modules. 1=PM511 in position 1 (left) is active. 2=PM511 in position 2 (right) is active.	–
51	SWERR	system	H'0	I(r)	S**SW** program card **ERR**or state.	See Error Handling.
22	SWPOS	system	0	I(r)	**POS**ition of **S**oft**W**are program card. Card containing boot block and base system software.	0=not in CPU, 1=left CPU, 2=right CPU.
23	ERR1	system	0	B(r)	**ERR**or flag **1** indicating error on S100 I/O bus extension connected to the left CPU.	–
24	ERR2	system	0	B(r)	**ERR**or flag **2** indicating error on S100 I/O bus extension connected to the right CPU.	–

Function

You can not modify any terminal of the data base element PM511.

The main functions of the element are:

- To indicate where in the subrack the hardware PM511 is placed.
- To indicate whether CPU redundancy has been installed.
- To indicate which one out of 2 redundant PM511s is active.
- To indicate position and status for the system software program card.
- To indicate if there are any errors on the S100 I/O bus extension.

Error Handling

WARNING Warning.

ERR Error.

ERRTYPE Error type.

Bit pattern, default B 0000 0000 0000 0000.

Bit 0 is at the right-hand side.

Bit 15 is at the left-hand side

SWERR System software program card error.

Bit pattern, default B 0000 0000 0000 0000.

Bit 0 is at the right-hand side.

ERR1 Error flag 1.

ERR2 Error flag 2.

.

Bits 0-7, primary (active) processor

ERRTYPE	Error
0	Warning
1	1-bit correction in RAM of PM511
2-5	*Not used*
6	Redundancy Control (RCU) self test
7	Redundancy Control (RCU) supervision

Bits 8-15, backup (backup) processor

ERRTYPE	Error
8	Warning
9	Error
10	Redundancy Control (RCU) self test
11	Redundancy Control (RCU) supervision
12	RAM checksum
13	Backup processor missing
14	Backup processor not ready
15	*Not used*

Bits 0-15, supervision of program card

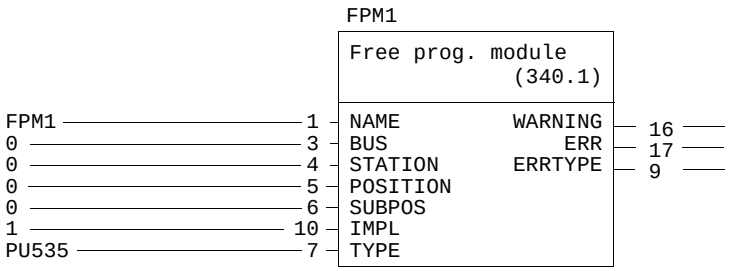
SWERR	Error
0	Warning
1	Error
2	Not original card
3	Checksum error
4	Card missing
5	Supervision not active
6	Initial check in progress
7-15	*Not used*

Free prog. module PU535

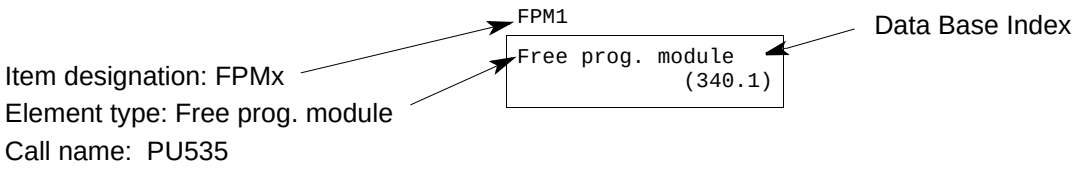
Summary

The data base element Free prog. module represents the hardware PU535. PU535 is called Free-Programmable Module (FPM). PU535 contains a user-defined language C program which interfaces a PC program.

Overview



Head



Terminal Description

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	user	FPMx	–	Unique **NAME** of the element.	–
3	BUS	predef	0	–	**BUS**. Part of Address.	See section “Address Terminals BUS, STATION, POSITION and SUBPOS” in the Introduction.
4	STATION	predef	0	–	**STATION**. Part of Address.	
5	POSITION	user	0	–	**POSITION**. Part of Address.	
6	SUBPOS	user	0	–	**SUBPOS**. Part of Address.	
10	IMPL	user	1	–	0=the module is spare 1=the module is **IMPL**emented.	–

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
7	TYPE	predef	PU535	–	**TYPE** designation of the hardware module.	–
16	WARNING	PC	0	B(r/w)	**WARNING** flag indicating non-fatal errors.	–
17	ERR	PC	0	B(r/w)	**ERR**or flag indicating hardware or configuration error.	–
9	ERRTYPE	PC	0	I(r/w)	**ERR**or **TYPE**.	–

Function

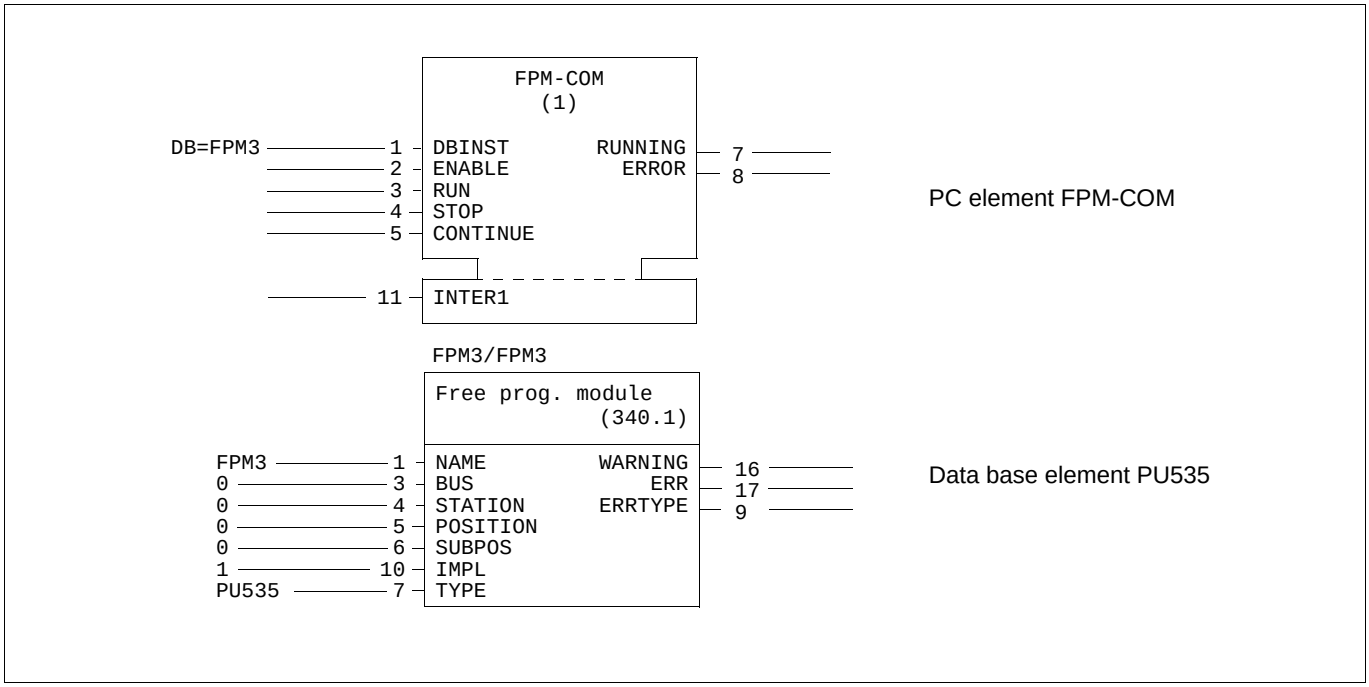
The main functions of the data base element Free prog. module are:

- to indicate where in the subrack the hardware PU535 is placed.
- to pass error information from the PC program to System Status.

PC Elements and Data Base Element

The PC program interfaces PU535 by means of PC elements FPM-COM, FPM-I, FPM-O, FPM-IA, FPM-OA.

The PC element input DBINST references the PU535 hardware (see figure below).



Normal configuration

It is sufficient to modify the following inputs:

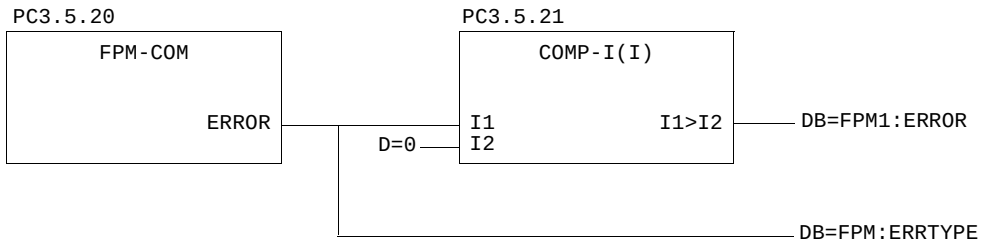
NAME	The name is referenced by the PC program. The name is also presented in System Status. (You may use the default NAME, e.g. FPMx.)
POSITION	See section “Address Terminals BUS,STATION, POSITION and SUBPOS” in the Introduction.
SUBPOS	See section “Address Terminals BUS,STATION, POSITION and SUBPOS” in the Introduction.

Special configuration

IMPL	The input IMPL means implemented. When IMPL=0, the PC program does not access the hardware. When IMPL=1, you are **NOT** allowed to change positions of PU535, i.e. modify inputs POSITION and SUBPOS (also when the Controller is in operation mode).
NAME	The NAME is presented in the System Status display “Node Status”.
WARNING	When output WARNING is 1, there is a “warning” (yellow square) in the Node Status display.
ERR	When output ERROR is 1, there is an “error” (red square) in the System Status display.
ERRTYPE	Error type.

The outputs ERR, WARNING, and ERRTYPE are to be connected to PC element outputs. The PC program decides when to set ERR, WARNING, and ERRTYPE.

Example of error handling

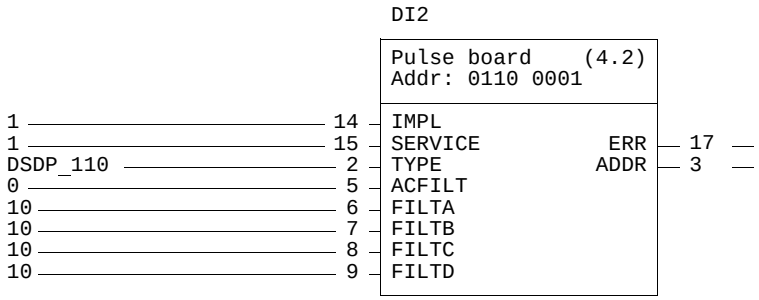


Pulse Board PULSE

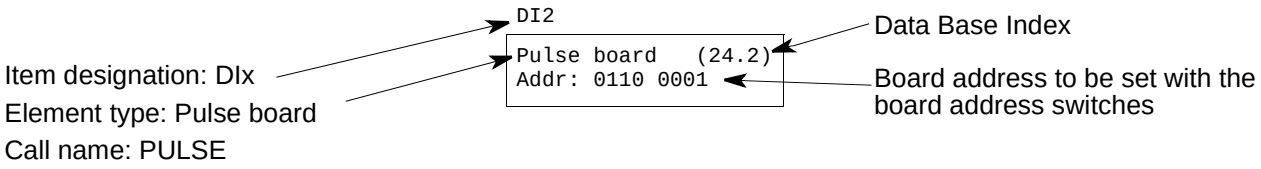
Summary

The Pulse board data base element holds the data values of the terminals associated to pulse counter boards of type DSDP 110 and similar boards. The element is superior to the signal elements associated to the pulse counter input channels in the board.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
14	IMPL	user	1	B(r)	0=the board is spare 1=the board is **IMPL**emented	–
15	SERVICE	user, dialog	1	B(r/w)	The in-**SERVICE** terminal controls/ shows whether the board is in service or has been taken out of service.	–
2	TYPE	user	DSDP _110	–	Board **TYPE**: DSDP_110, DSDP_115, or DSDP_120	TYPE must be selected when creating the element. The full name including "_" must be entered.

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
5	ACFILT	user	0	–	1=**FILT**er time is doubled for signal transition to 0. Suitable for AV-signals (irrelevant for DSDP_110).	–
6	FILTA	user	10	–	**FILT**er time for first group of 8 channels. 0 - 63 ms.	–
7	FILTB	user	10	–	**FILT**er time for second group of 8 channels. 0 - 63 ms.	–
8	FILTC	user	10	–	**FILT**er time for third group of 8 channels. 0 - 63 ms.	–
9	FILTD	user	10	–	**FILT**er time for fourth group of 8 channels. 0 - 63 ms.	–
17	ERR	system	–	–	**ERR**or flag indicating non-functional board.	–
3	ADDR	system	–	–	Board location within the I/O **ADDR**ess range, presented in decimal format.	Cannot be changed.

Hardware Function

The process signal lines are connected in the connection unit DSTD 150. This unit contains overvoltage protection for the inputs and fuses for power distribution lines. The DSDP_110 board contains 4 groups of inputs, each with 7 pulse counting inputs. In addition there is a special input that controls the direction of count (up or down) for all inputs in each group.

A microprocessor on the board reads the inputs, handles filtering and counts the filtered pulses in a register.

A red LED indicates a fault or un-indicated board. 32 yellow LEDs indicate the state of the inputs.

For board data and strappings, please refer to Advant Controller 400 Series documentation.

Board Set-up Procedure

The board set-up procedure includes:

1. Implementation
2. Board type selection
3. Error handling.

1. Implementation

During system INIT the board and its signals are included in the tables that define the process communication. If you set IMPL=0 the board, and the channels associated with it, are removed from the PDC's tables at the next scan.

2. Board type selection

Only one board type is available in standard Advant Controller 400 Series. This type is preselected: DSDP_110.

3. Error handling

The ERR terminal is set in Pulse board element, if the board is determined non-functional by the control function. Indicated errors are non-existent, malfunctioning or improperly strapped hardware or software or data base errors.

The ERR terminal can be connected to the PC program for desired function. ERR is reset, if hardware error, within 5 seconds of replacement of the non-functional board. The board must be re-synchronized. The fault lamp on the board is lit when ERR is set (if the CPU still has access to the board).

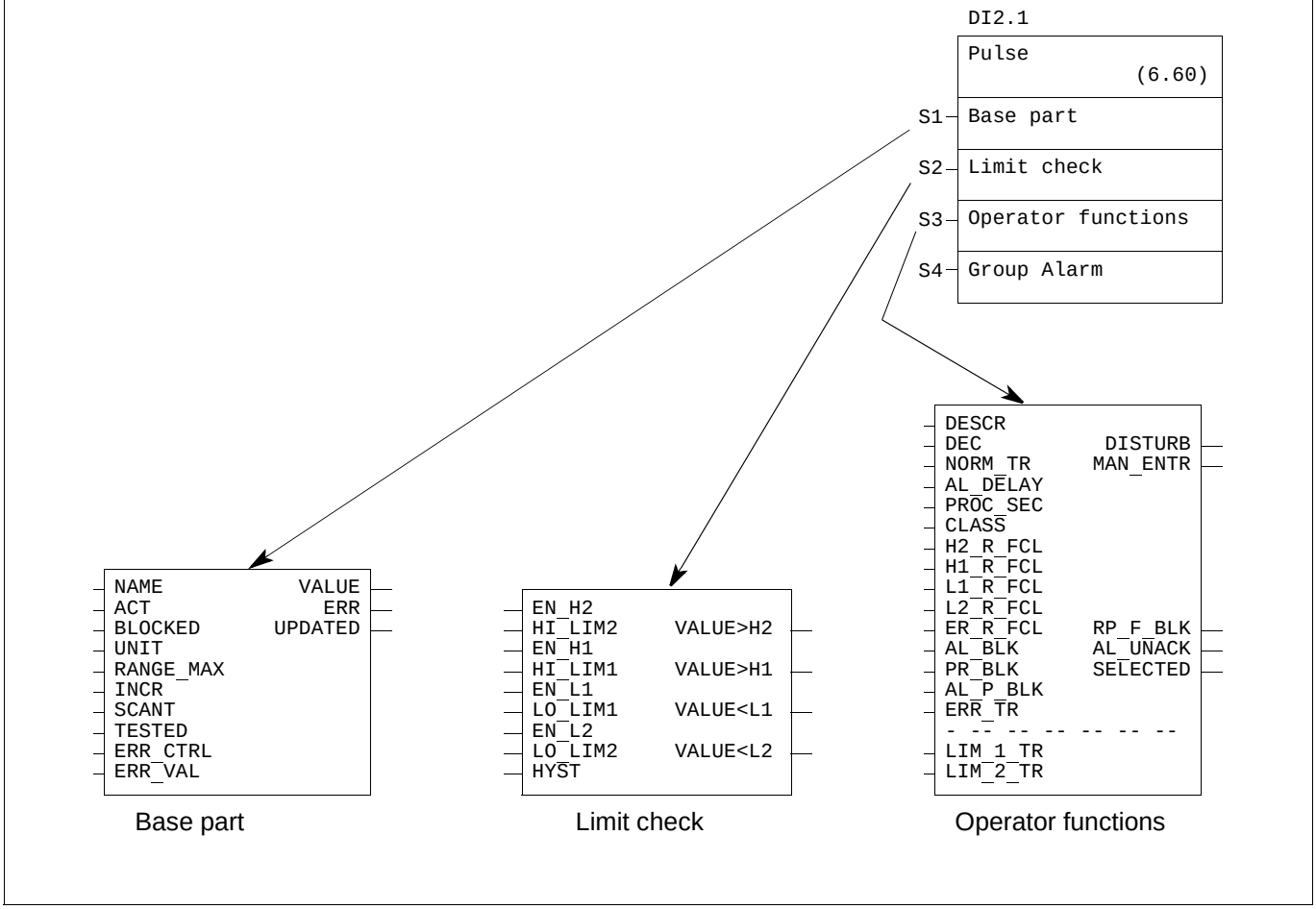
Pulse PULSES

Summary

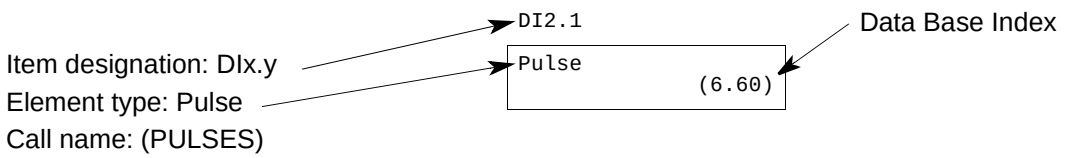
The Pulse data base element holds the data values of the terminals associated to a pulse input channel (for DSDP110 and similar boards). The element is subordinate to the Pulse board element associated to the board in which the input channel is implemented.

For information about the extension parts of Group Alarm see data base element Group Member.

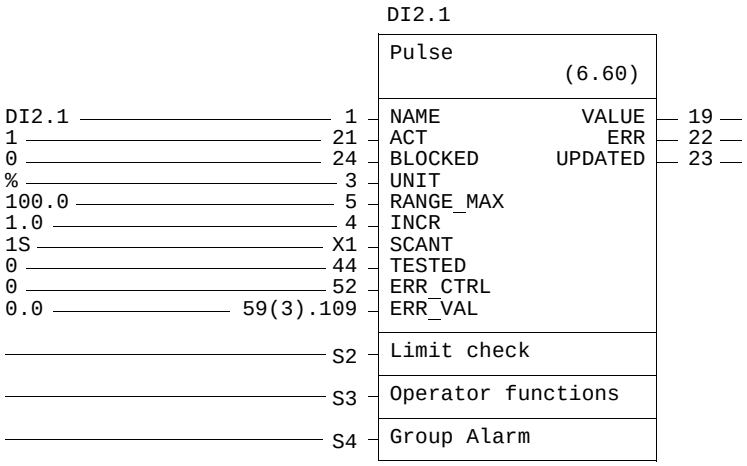
Overview



Head



Base part



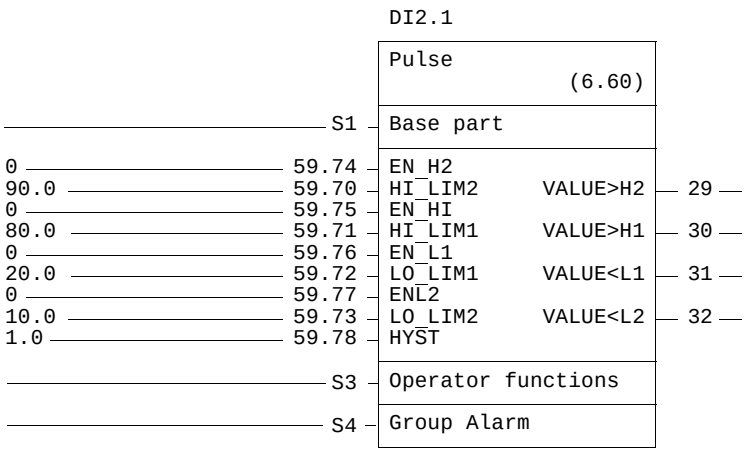
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	DIx.y	–	Each Pulse signal must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
21	ACT	user	1	B(r)	1=the signal is **ACT**ive 0=the signal is spare	–
24	BLOCKED	dialog	0	B(r/w)	1=updating of signal value is **BLOCKED**.	–
3	UNIT	user	%	–	The signal **UNIT** in engineering unit.	Max. 6 characters shown in Operator Station and data base element.
5	RANGEMAX	user	100.0	B(r/w)	**RANGE MAX**imum. Maximum value to be measured.	Derives scaling of register and display scaling. RANGEMAX must be a multiple of INCR.

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
4	INCR	user	1.0	B(r/w)	**INCR**ement. The value of one pulse expressed in engineering unit.	Derives scaling.
X1	SCANT	user	1 s	–	**SCAN T**ime interval for input: see Introduction, section ”Allowed SCANT values”.	–
44	TESTED	user	0	B(r/w)	Can be set by user to indicate that the signal has been **TESTED** at start-up.	Does not affect the system.
52	ERR_CTRL	user	0	B	**ERR**or **C**on**TR**o**L**. 0=Value is frozen when error occurs. 1=Value is set to the value of ERR_VAL when error occurs.	–
59(3).109	ERR_VAL	user	0.0	–	**ERR**or **VAL**ue. Value to be set when error occurs and ERR_CTRL=1.	–
19	VALUE	system	–	R(r/w)	Process **VALUE** in engineering unit.	–
22	ERR	system	–	B(r/w)	1=Hardware or configuration **ERR**or or signal overflow.	–
23	UPDATED	system	–	B(r/w)	1=system indicates that the value has been **UPDATED**.	Cannot be affected by user.

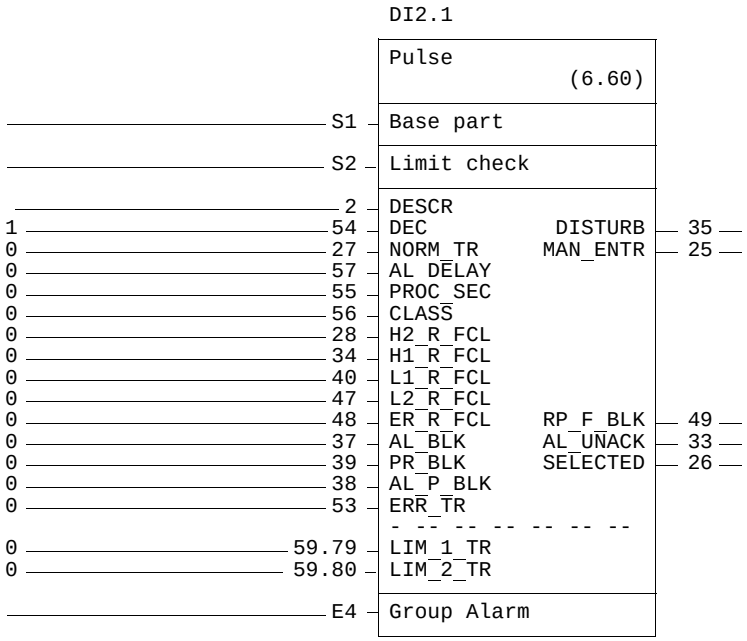
Limit check



Terminal Description, Limit check

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
59.74	EN_H2	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **2**.	–
59.70	HI_LIM2	user	90.0	R(r/w)	**HI**gh **LIM**it no. **2** in engineering unit.	Accepted value HI_LIM2 > HI_LIM1.
29	VALUE>H2	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **2**.	Cannot be affected by user.
59.75	EN_H1	user	0	B(r/w)	1=**EN**ables **H**igh limit no. **1**.	–
59.71	HI_LIM1	user	80.0	R(r/w)	**HI**gh **LIM**it no. **1** in engineering unit.	Accepted value LO_LIM1 < HI_LIM1 < HI_LIM2.
30	VALUE>H1	system	–	B(r/w)	1=**VALUE** has exceeded **H**igh limit no. **1**.	Cannot be affected by user.
59.76	EN_L1	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **1**.	–
59.72	LO_LIM1	user	20.0	R(r/w)	**LO**wer **LIM**it no. **1** in engineering unit.	Accepted value HI_LIM1 > LO_LIM1 > LO_LIM2.
31	VALUE<L1	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **1**.	Cannot be affected by user.
59.77	EN_L2	user	0	B(r/w)	1=**EN**ables **L**ow limit no. **2**.	–
59.73	LO_LIM2	user	10.0	R(r/w)	**LO**wer **LIM**it no. **2** in engineering unit.	Accepted value LO_LIM2 < LO_LIM1.
32	VALUE<L2	system	–	B(r/w)	1=**VALUE** has fallen below **L**ow limit no. **2**.	Cannot be affected by user.
59.78	HYST	user	1.0	R(r/w)	**HYST**eresis for limit check in engineering units.	The hysteresis is located within each limit.

Operator functions



Terminal Description, Operator functions

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	DESCR	user	–	–	This **DESCR**iption of the signal will be used in pictures and lists in Operator Station.	Max. 20 characters
54	DEC	user	1	–	The number of **DEC**imals to be presented by Operator Station.	0 - 6 decimals.
27	NORM_TR	user	0	B(r/w)	1=**NORM**al event handling in Operator Station.	0=no event handing.
57	AL_DELAY	user, PC	0	I(r/w)	**AL**arm **DELAY** shows delay in seconds: 1 - 127.	0=no delay.
55	PROC_SEC	user	0	–	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.

Terminal Description, Operator functions (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
56	CLASS	user	0	–	**CLASS** subdivides process section. Used by status list function in Operator Station.	–
28	H2_R_FCL	user	0	B(r)	**H**igh limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H2 limit alarms.	–
34	H1_R_FCL	user	0	B(r)	**H**igh limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating H1 limit alarms.	–
40	L1_R_FCL	user	0	B(r)	**L**ow limit **1 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L1 limit alarms.	–
47	L2_R_FCL	user	0	B(r)	**L**ow limit **2 R**epeat **F**ail **C**ontro**L**. Reduced number of reports in Operator Station of repeating L2 limit alarms.	–
48	ER_R_FCL	user	0	B(r)	**ER**ror **R**epeat **F**ail **C**ontro**L**. Reduced number of repeating error alarms.	–
37	AL_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
39	PR_BLK	dialog	0	B(r/w)	Flag for **BL**oc**K**ing of **PR**intout in Operator Station.	–
38	AL_P_BLK	PC	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K**. Flag for temporary blocking of alarm indication and event handling in Operator Station by PC-program.	–
53	ERR_TR	user	0	–	**ERR**or **TR**eatment. Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of signal errors.	Recommended settings 0=No event reporting 2=Event reporting incl. alarm handling
59.79	LIM_1_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H1 and **L1 LIM**it **TR**ansgressions.	Recommended settings 0=No event handling 3=Event handling, no alarm handling 4=Event handling, incl. alarm handling

Terminal Description, Operator functions (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
59.80	LIM_2_TR	user	0	–	Pointer to data base element in EVENT_TREAT which defines the event handling in Operator Station of H2 and L**2 LIM**it **TR**ansgressions.	Recommended settings 0=No event handling 3=Event handling, no alarm handling 4=Event handling, incl. alarm handling
35	DISTURB	system	–	B(r/w)	**DISTURB**ance. Flag indication whether a state of alarm exists in the element.	Cannot be affected by user.
25	MAN_ENTR	system	–	B(r/w)	1=Flag indication that the signal VALUE has been **MAN**ually **ENT**e**R**ed by the Operator Station operator.	–
49	RP_F_BLK	system	–	B(r/w)	**R**e**P**eat **F**lag **BL**oc**K**. Flag indicating that a repeating alarm is present in the element but that the indication has been blocked.	–
33	AL_UNACK	system	–	B(r/w)	Flag indicating whether an **UNACK**nowledged **AL**arm exists in the element.	–
26	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	–

Function

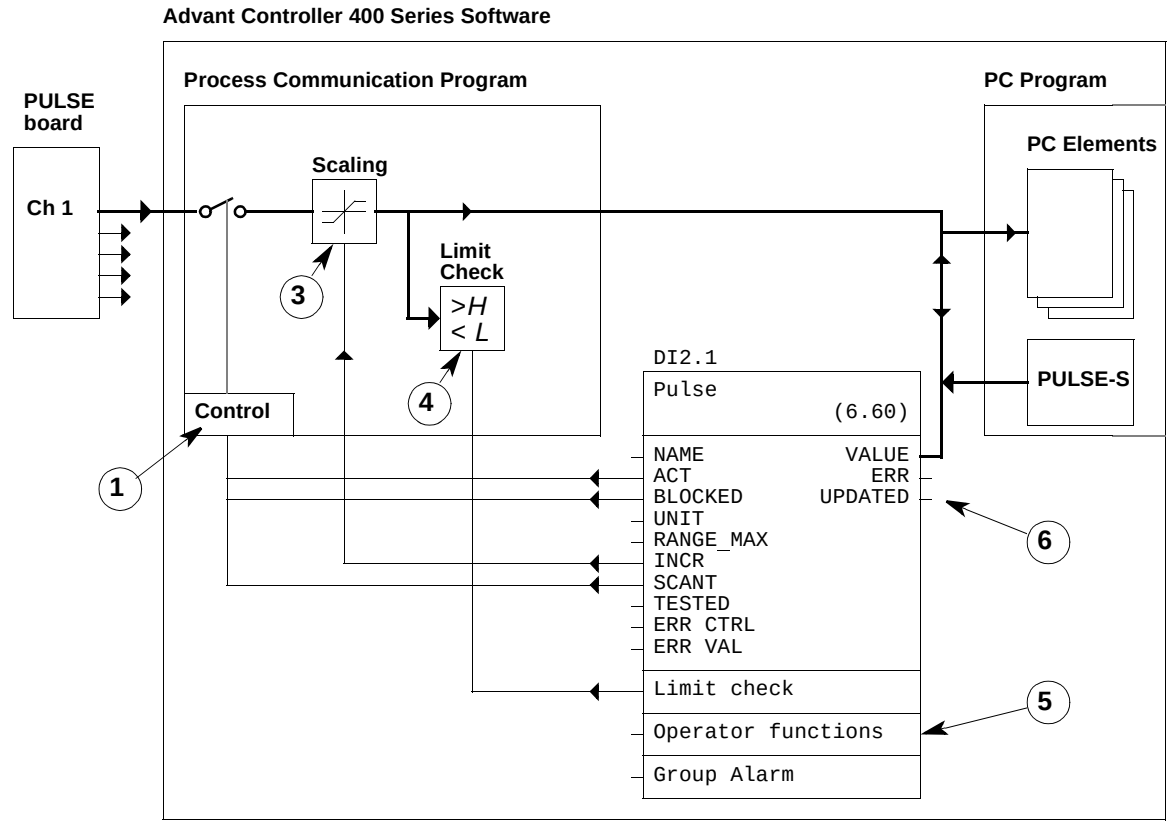
The Pulse data base element defines a pulse input signal. With the data base element you control the signal processing executed by the process communication program. You can also define limit checking and the interface to the Operator Station system.

The signal processing includes:

1. Synchronization
2. Updating
3. Scaling
4. Limit Check
5. Operator Station functions
6. Error handling.

The figure below illustrates this process.

Function of Pulse Terminals



1. Synchronization

After system init or ”overflow ERRor” synchronization must be done with the help of the PC element PULSE-S.

Synchronization can be made against any value (position) within the 0 to RANGEMAX area. The value must be a multiple of INCR.

2. Updating

The analog signal is converted and read at intervals determined by the terminal SCANTime. You should set SCANT to the requirements of your system.

If you set BLOCKED, the data acquisition stops, allowing manual entry of VALUE.

To disable the data acquisition completely, you set ACTivated to 0. This excludes the input from processing.

3. Scaling

All values are used in the system as engineering units.

Scaling from physical pulses to engineering units is entered as INCR, meaning the value corresponding to one increment pulse in desired unit.

In total, the system can count up to 65536 pulses. Maximum possible range is therefore 65536·INCR. Outside this range ERR is obtained. RANGEMAX must be selected below this value, and RANGEMAX must be a multiple of INCR.

Measurement range is 0 to RANGEMAX. RANGEMAX has two functions:

1. to center the pulse-counter around the measurement range midpoint (RANGEMAX/2).

   The number of pulses that can be counted is 32767 above and below this midpoint. Outside this range ERR is obtained.

2. to select a range (DISPMIN-DISPMAX) for display on Operator Station Bargraph display.

These relations are described in the figure for Range DISPMIN-DISPMAX at the end of this element description.

Expressed in engineering units this means that out-of-range-ERRor will occur below:

VALUE<RANGEMAX/2 –32768*INCR

and above

VALUE>RANGEMAX/2 +32767*INCR

Usually the working measurement range is much wider than the needed one.

Negative values can thus be obtained and are handled correctly within the above limit.

The engineering unit can be entered in UNIT, for documentation and display purposes.

4. Limit check

In the Limit check part of the data base element you determine whether and how a limit check will be performed. The result is stored in the output terminals and is thus available to PC and other programs. If the NORM_TR terminal is set to 1 each change in limit check status is also sent to the Advant Station 500 Series Operator Station.

The main use of this function is for Operator Station presentation, but it is also a convenient alternative to limit checking with PC element COMP-R.

5. Operator Station functions

If Advant Station 500 Series Operator Station is included in your system, please refer to the Advant Station 500 Series Operator Station documentation and Functional Unit documentation.

6. Error handling

If ERR is set, VALUE will not be updated but the last value is retained. The signal ERR terminal and the ERR terminal of the Pulse board element can be connected to the PC program for desired function.

ERR for a Pulse signal has 3 main causes, 1 system and 2 operator causes:

1. ERR in Pulse board is set. This occurs if the board is determined non-functional.

   ERR is reset, if hardware error, automatically within 5 s of replacement of the non-functional board. Re-synchronization must be made.

2. Out-of-range. ERR is set for overflow in the pulse-counter. After out-of-range, synchronization must be done for the element to start working again. Out-of-range (accumulator overflow) takes place well above DISPMAX and below DISPMIN (see scaling, above).

   ERR is reset when error condition disappears (synchronization is done).

3. ERR is set if IMPL was not set for the board during last system init.

   Thus, a PC program could treat the condition ”signal-ERR=1 and board-ERR=1” as hardware (board) error, and the condition ”signal-ERR=1 and board-ERR=0” as signal error (out-of-range, missing direction indication…).

   It is practical, however, to use Limit check part of the DBE to check for out-of-range problems. Such problems may be caused by mechanical or transducer error, or missing or faulty direction indication or synchronization signal.

Range Example

If the input of one pulse from the pulse transducer represents 0.2 millimeter movement, and total movement is 3.5 meter, set:

INCR = 0.2 (or 0.0002)

UNIT = mm (or meter)

RANGEMAX to maximum value expected, that is 3500 (or 3.5)

VALUE will vary between 0 and 3500 (0 - 3.5) if the pulse counting is started in the bottom position.

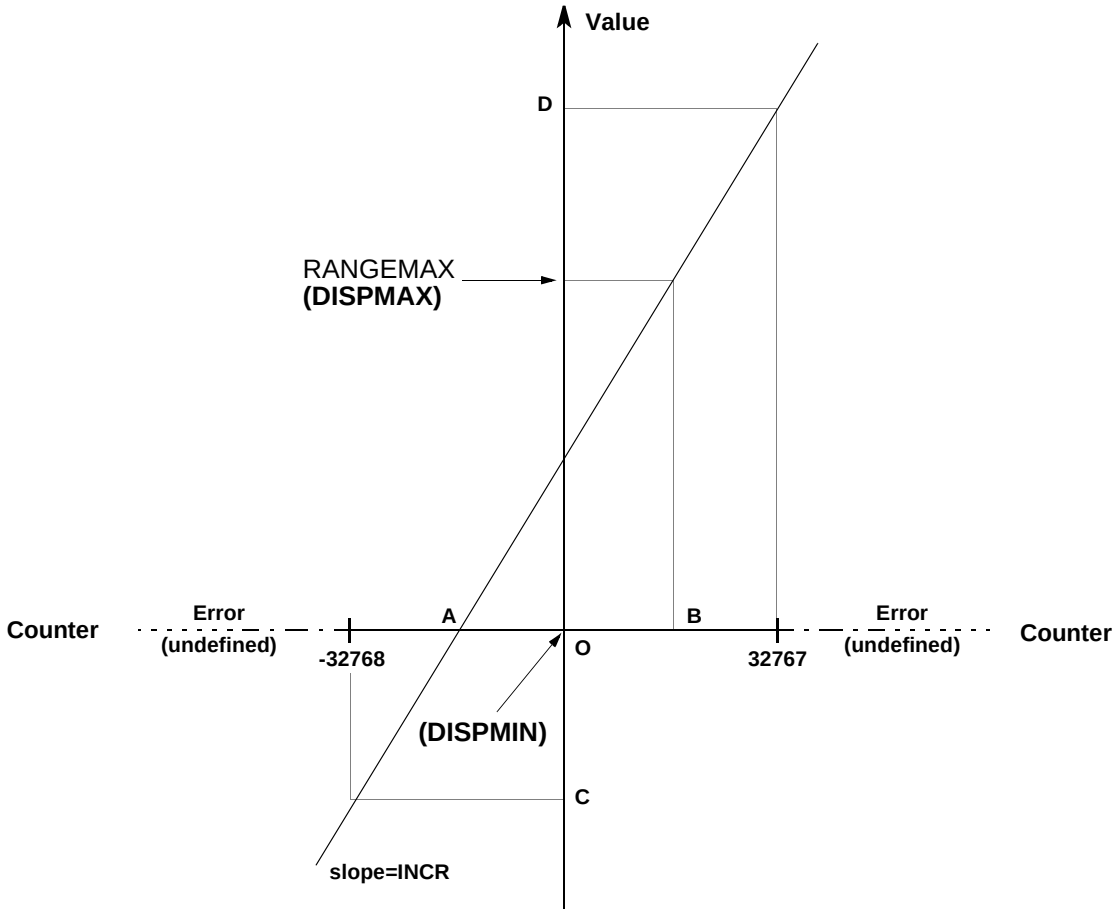
17500 pulses will correspond to full specified movement.

Maximum possible range is 65536·0.2 mm=13.107 m.

Synchronization (resetting) of the pulse counter is done by the PC element PULSE-S with the value given at PC-element terminal SYNC-V. Synchronization can be done to a value between 0 and RANGEMAX (DISPMAX). The value must be a multiple of INCR.

Advant Station 500 Series Operator Station display will handle only ”unipolar range”: positive VALUES if RANGEMAX (DISPMAX) is positive and negative if RANGEMAX is negative. To display a range through zero the PULSE element can be connected, in a PC program, to an AI Calculated element where desired DISP-range can be selected.

Range DISPMIN-DISPMAX



Range DISPMIN-DISPMAX is nominal measuring range

A-B is actually used pulse-counter capacity.

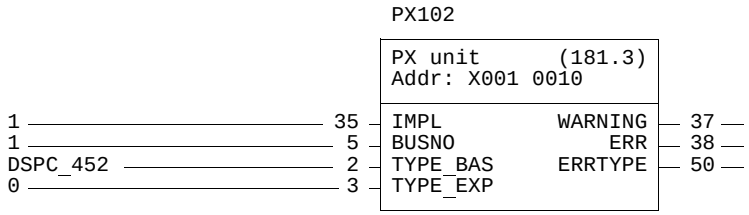
C-D is possible measuring range (maximum pulse-counter capacity).

PX unit PX

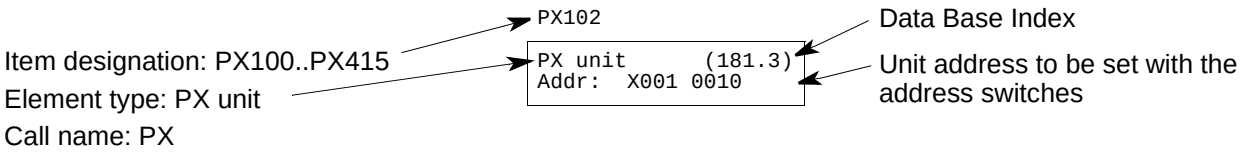
Summary

The PX unit data base element holds the data needed to define Programmable Controller units connected to the MasterFieldbus.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
35	IMPL	user	1	B(r)	**IMPL**emented. 0=The element is spare. 1=The unit is implemented.	–
5	BUSNO	user	*	I(r)	The **N**umber of the **BUS** to which the unit is connected.	–
2	TYPE_BAS	user	DSPC_452	–	Board **TYPE** of **BAS**ic unit: DSPC_452, DSPC_454, CI670, CI670.*, DSXG_415, UNIT or UNIT.*.	TYPE DSPC_452 is valid for DSPC_452L and DSPC_454 for DSPC_454L.

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
3	TYPE_EXP	user	0	–	Board **TYPE** for **EX**Pansion unit: DSDI_451, DSDX_451, DSDI_453, DSDX_453 or 0 (none).	TYPE DSDX_451 is valid for DSDX_451L and DSDX_453 for DSDX_453L.
37	WARNING	system	–	B(r)	**WARNING**. Fault, causing stopped execution.	–
38	ERR	system	–	B(r)	**ERR**or flag indicating error stopping execution	–
50	ERRTYPE	system	–	I(r/w)	**ERR**or **TYPE**.	See the table for Error types below.

Error Types

Flag E or W indicates whether the element outputs ERR or WARNING are set.

Flag	ERRTYPE	Error
	Not initiated	Illegal BUSNO, IMPL=0 at system init or system not started.
E	Bus controller error	Bus controller board (CI570) is faulty or missing.
E	Communication error	Communication faulty, no reply from unit.
E	TYPE_BAS mismatch	The unit type does not agree with TYPE_BAS.
E	Other error	May be set temporarily during restart.
W	Local network fail	Only valid for CI670.
W	TYPE_EXP fail	Unit type of expansion unit does not agree with TYPE_EXP.
W	Transducer power	Transducer power of base unit fails (fuse?).
W	Exp. transducer power	Transducer power of expansion unit fails (fuse?).
	Unit in local mode	The PC element COM_MP51 has not been created or the element has the connection REMOTE=0.
	Error Channel A	Error on redundant channel A (modem, cable?)
	Error Channel B	Error on redundant channel B (modem, cable?)
	OK	No error.

The most significant error (uppermost text in table) is given if multiple error occurs.

BUSNO – Bus Number

With this terminal you select the number of the bus that the PX unit is to be connected to.

The lowest bus number with less than 16 units is given as the default BUSNO value.

BUSNO can be changed if the system is in configuration mode.

BUSNO is included as the first digit in the Item designation. The full unit address to be set on the S400 I/O unit is shown in the element head.

Item designation: PXabb	a = bus
Address in binary: xaaa bbbb	b = node on bus x = hi speed/low speed

Example:

Item designation:	PX307
BUSNO:	3
Node on bus:	7
Unit address:	x011 0111

TYPE_BASE board type of basic unit

For CI670.∗ , 1≤ ∗ ≤16.

For UNIT.∗ , 1≤ ∗ ≤4.

The number, e.g. 4 stands for four occupied nodes.

Function

More information is to be found in the manuals *S400 I/O User's Guide* and *Advant Controller 110 User's Guide*.

Note that ERRTYPE = ”Local network fail” reflects the STATUS terminal of the MFB-OUT PC element in the connected unit. This terminal may be application programmed to report communication errors or any combination of ERRors given in data base elements.

To connect an Advant Controller 110 to Advant Controller 400 Series via MasterFieldbus

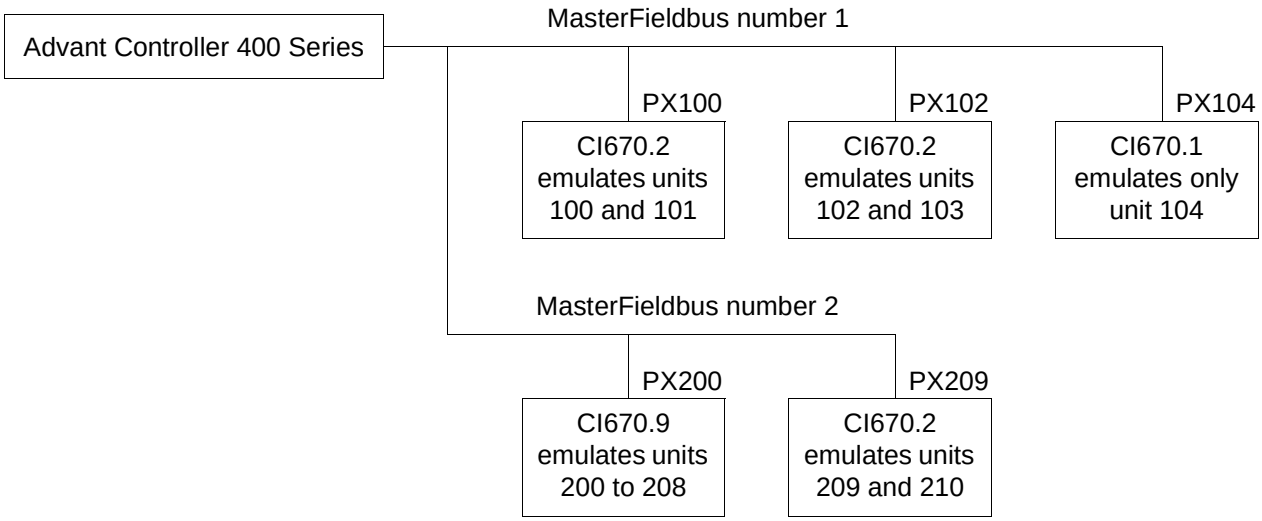
For a S400 I/O unit the normal configuration on the Master Fieldbus is one data base element in Advant Controller 400 Series to one of the 16 units on the bus. When an Advant Controller 110 is connected to the Master Fieldbus the data base element PX defines one or more units on the Master Fieldbus, because the bus coupler CI670 in Advant Controller 110 can emulate more than one unit. Each emulated unit corresponds to one set of PC element MFB-IN/OUT in Advant Controller 400 Series and Advant Controller 110. The required number of units is specified on the data base element terminal TYPE_BAS. All emulated units in one Advant Controller 110 are in consecutive order.

Example:

In the configuration below two MasterFieldbus are used. On bus number 1 three Advant Controller 100 Series units are used, the first emulates two units on the bus, the second emulates two units and a third emulates one unit.

On bus number 2 two Advant Controller 110 are used, the first emulates 8 units and a second emulates 2 units.

MasterFieldbus Configuration Example



In this configuration it is not possible to re-dimension the range of units for data base element PX100, PX102 and PX200 without a re-configuration of the MasterFieldbus. The data base element with unit number PX104 and PX209 are possible to re-dimension after they have been deleted.

To make it possible to increase the communication capacity in a late state, it is recommended to dimension for some extra units in the PX data base elements in the Advant Controller 400 Series.

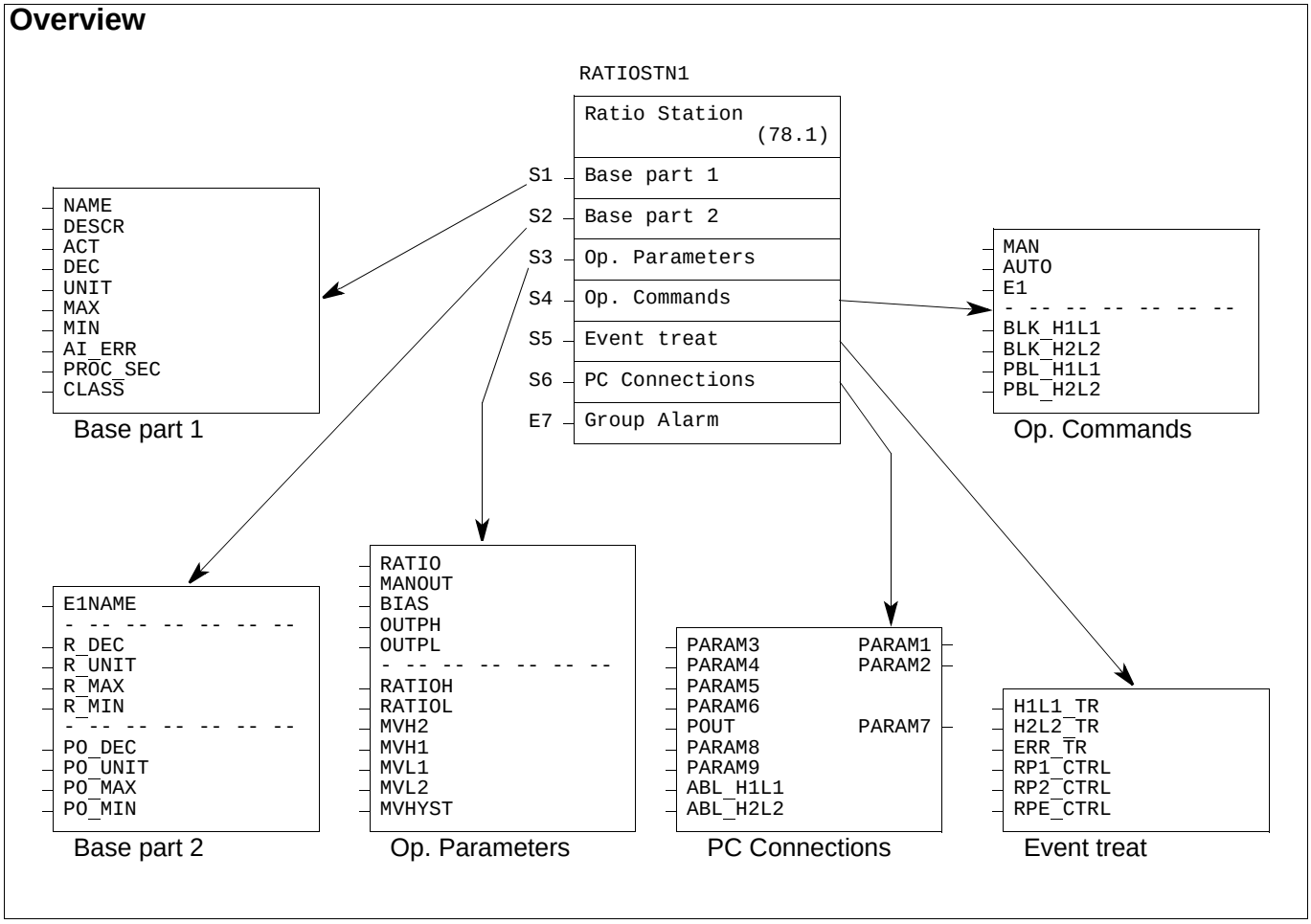
Ratio Station RATIOSTN

Summary

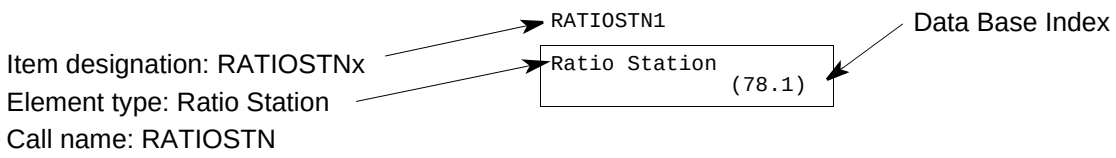
The Ratio Station data base element is used to build up Advant Station 500 Series Operator Station functions for the RATIOSTN functional unit. Some static information in the displays can be given. Parameters which can be changed from the dialog can be given start values. The element performs an interface between the PC-program/process function and Advant Station 500 Series Operator Station.

For further information, please refer to the description of the functional unit RATIOSTN. For information about the extension parts of Group Alarm see data base element Group Member.

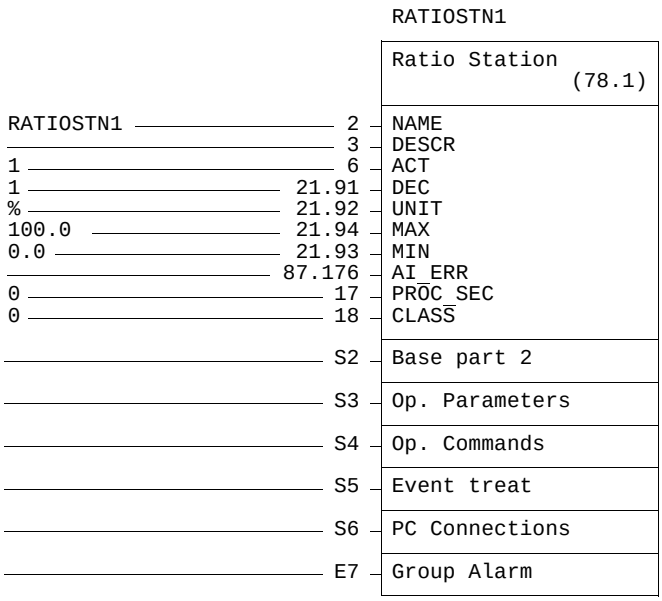
Overview



Head



Base part 1



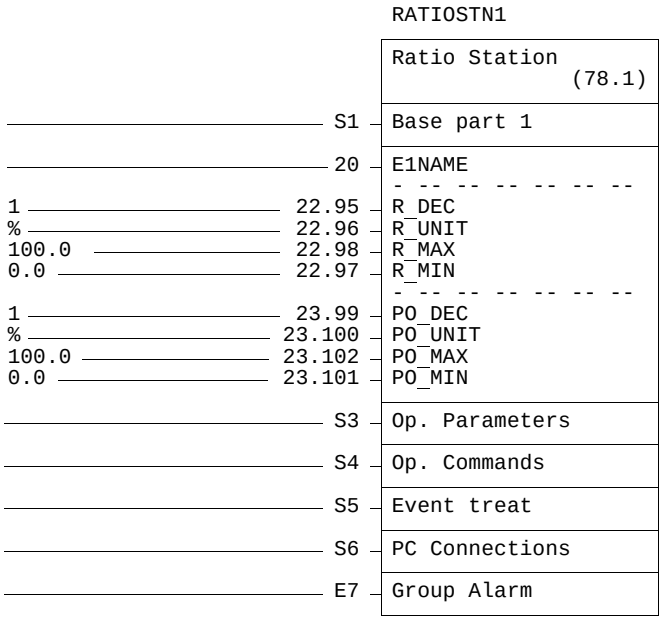
Terminal Description, Base part 1

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	NAME	user	RATIO STNx	–	Each Ratio Station must have a unique **NAME**. E.g. YY101.	Max. 20 characters. Spaces are not allowed.
3	DESCR	user	–	–	This **DESCR**iption of the Ratio Station will be shown in Operator Station.	Max. 20 characters. You may enter any information regarding the controller.
6	ACT	user	1	B(r/w)	1=operator communication is **ACT**ive.	0=dialog is blocked and events are not updated.

Terminal Description, Base part 1 (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
21.91	DEC	user	1	–	The number of **DEC**imals for measured value and its alarm limits.	A total number of 5 figures plus point and sign can be presented. 0 - 6 decimals.
21.92	UNIT	user	%	A6(r)	The **UNIT** of the measured value in engineering unit.	Max. 6 characters shown in Operator Station and data base element.
21.94	MAX	user	100.0	R(r/w)	**MAX**imum value within measuring range.	Used for scaling of bar graph.
21.93	MIN	user	0.0	R(r/w)	**MIN**imum value within measuring range.	Used for scaling of bar graph.
87.176	AI_ERR	user	–	–	**AI ERR**or. Reference to the Analog Input element which is used for the measured value.	Connects error flag in the analog input to RATIOSTN. E.g. YY 101. Change is carried out at next system init.
17	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
18	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station	–

Base part 2



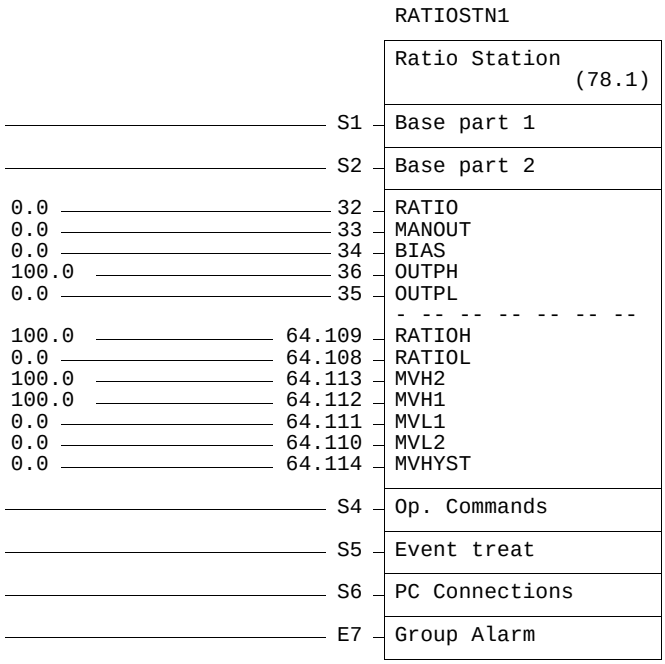
Terminal Description, Base part 2

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
20	E1NAME	user	–	–	**NAME** of **E**xternal reference.	The text entered here will be presented in the object display under ”CONTROL MODE”.
22.95	R_DEC	user	1	A6(r)	The number of **DEC**imals for presentation of **R**atio factor.	A total number of 5 figures plus point and sign can be presented. 0 - 6 decimals.
22.96	R_UNIT	user	%	R(r/w)	The **UNIT** for the **R**atio factor in engineering unit.	Max. 6 characters shown in Operator Station and data base element.
22.98	R_MAX	user	100.0	R(r/w)	**MAX**imum **R**atio factor.	Used for dimensioning of INC/DEC step.
22.97	R_MIN	user	0.0	R(r/w)	**MIN**imum **R**atio factor.	Used for dimensioning of INC/DEC step.
23.99	PO_DEC	user	1	–	The number of **DEC**imals for **P**rocess **O**utput value presentation.	A total number of 5 figures plus point and sign can be presented. 0 - 6 decimals.

Terminal Description, Base part 2 (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
23.100	PO_UNIT	user	%	A6(r)	The **UNIT** of the **P**rocess **O**utput value in engineering unit.	Max. 6 characters shown in Operator Station and data base element.
23.102	PO_MAX	user	100.0	R(r/w)	**MAX**imum **P**rocess **O**utput value.	Used for dimensioning of INC/DEC step.
23.101	PO_MIN	user	0.0	R(r/w)	**MIN**imum **P**rocess **O**utput value.	Used for dimensioning of INC/DEC step. Used for dimensioning of INC/DEC step.

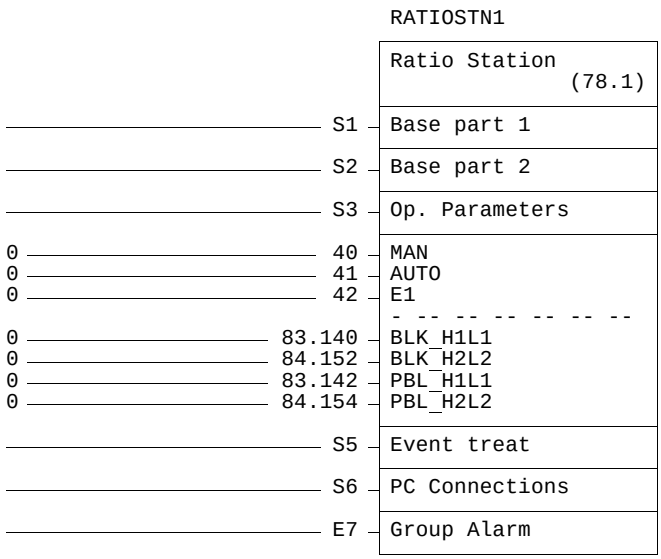
Operators Parameters



Terminal Description, Operators Parameters

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
32	RATIO	dialog	0.0	R(r/w)	**RATIO** factor in AUTO mode.	Unit acc. to R_UNIT.
33	MANOUT	dialog	0.0	R(r/w)	**MAN**ual **OUT**put.	Unit acc. to PO_UNIT.
34	BIAS	dialog	0.0	R(r/w)	**BIAS** factor.	Unit acc. to PO_UNIT.
36	OUTPH	dialog	100.0	R(r/w)	**OUTP**ut **H**igh limit.	Unit acc. to PO_UNIT.
35	OUTPL	dialog	0.0	R(r/w)	**OUTP**ut **L**ow limit.	Unit acc. to PO_UNIT.
64.109	RATIOH	dialog	100.0	R(r/w)	**H**igh limit of **RATIO** factor.	Unit acc. to R_UNIT.
64.108	RATIOL	dialog	0.0	R(r/w)	**L**ow limit of **RATIO** factor.	Unit acc. to R_UNIT.
64.113	MVH2	dialog	100.0	R(r/w)	Alarm limit **H2** of **M**easured **V**alue.	Unit acc. to UNIT.
64.112	MVH1	dialog	100.0	R(r/w)	Alarm limit **H1** of **M**easured **V**alue.	Unit acc. to UNIT.
64.111	MVL1	dialog	0.0	R(r/w)	Alarm limit **L1** of **M**easured **V**alue.	Unit acc. to UNIT.
64.110	MVL2	dialog	0.0	R(r/w)	Alarm limit **L2** of **M**easured **V**alue.	Unit acc. to UNIT.
64.114	MVHYST	user	0.0	R(r/w)	**HYST**eresis for alarm limits of **M**easured **V**alue.	Unit acc. to UNIT.

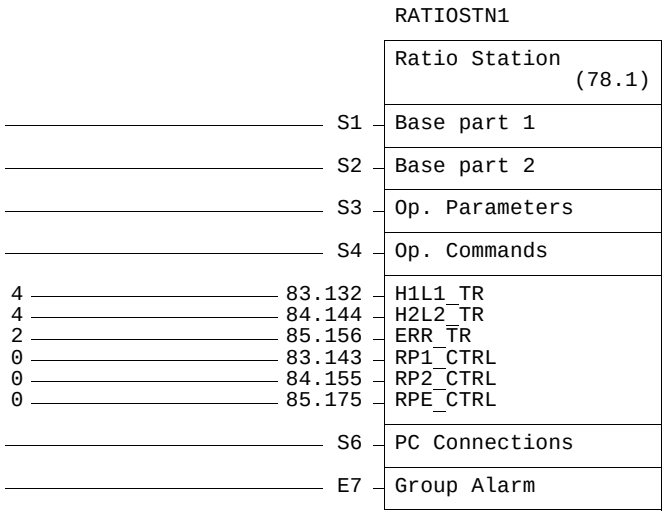
Operators Commands



Terminal Description, Operators Commands

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
40	MAN	dialog	0	B(r/w)	**MAN**ual mode.	Converted to pulse by the system.
41	AUTO	dialog	0	B(r/w)	**AUTO**matic mode.	Converted to pulse by the system.
42	E1	dialog	0	B(r/w)	**E**xternal mode 1.	Converted to pulse by the system.
83.140	BLK_H1L1	dialog	0	–	**BL**oc**K**ing of alarms **H1** and **L1**.	–
84.152	BLK_H2L2	dialog	0	–	**BL**oc**K**ing of alarms **H2** and **L2**.	–
83.142	PBL_H1L1	dialog	0	–	**BL**oc**K P**rinter for **H1** and **L1** alarms. Blocking of printer for H1 and L1 alarms.	–
84.154	PBL_H2L2	dialog	0	–	**BL**oc**K P**rinter for **H2** and **L2** alarms. Blocking of printer for H2 and L2 alarms.	–

Event treat



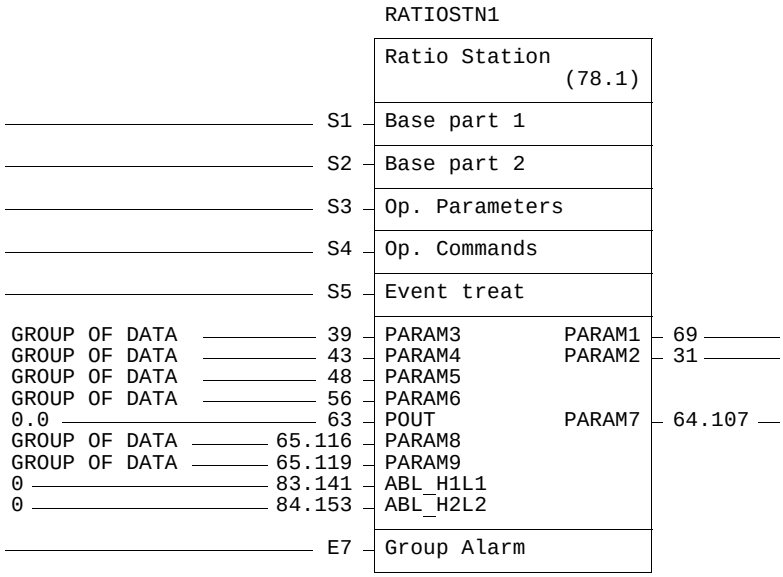
Terminal Description, Event treat

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
83.132	H1L1_TR	user	4	–	Alarm **H1** and **L1 TR**eatment. Instance number of the data base element Event Treat located in Operator Station and defining event treatment of the alarms H1 and L1.	–
84.144	H2L2_TR	user	4	–	Alarm **H2** and **L2 TR**eatment. Instance number of the data base element Event Treat located in Operator Station and defining event treatment of the alarms H2 and L2.	–
85.165	ERR_TR	user	2	–	**ERR**or **TR**eatment. Instance number of the data base element Event Treat located in Operator Station and defining event treatment of signal error in the analog input connected to the ratio station.	–
83.143	RP1_CTRL	user	0	–	**R**e**P**eat fail **C**on**TR**o**L** for alarms H**1** and L**1**. Blocking of repeating H1 and L1 alarms.	–
84.155	RP2_CTRL	user	0	–	**R**e**P**eat fail **C**on**TR**o**L** for alarms H**2** and L**2**. Blocking of repeating H2 and L2 alarms.	–

Terminal Description, Event treat (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
85.175	RPE_CTRL	user	0	–	**R**e**P**eat fail **C**on**TR**o**L** for signal **E**rror. Blocking of repeating signal error in the analog input connected to the ratio station.	–

PC Connections



Terminal Description, PC Connections

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
39	PARAM3	PC	–	I(r/w)	Group of data to be connected to the PC element connections **PARAM3**A and **PARAM3**B.	–
43	PARAM4	PC	–	I(r/w)	Group of data to be connected to the PC element connection **PARAM4**.	–
48	PARAM5	PC	–	I(r/w)	Group of data to be connected to the PC element connection **PARAM5**.	–
56	PARAM6	PC	–	A24 (r/w)	Group of data to be connected to the PC element connection **PARAM6**.	–

Terminal Description, PC Connections (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
63	POUT	PC	0.0	R(r/w)	To be connected to the PC element connection **OUT**. (For display purposes.)	–
65.116	PARAM8	PC	–	A8(r/w)	Group of data to be connected to the PC element connection **PARAM 8** if C2=1.	–
65.119	PARAM9	PC	–	R(r/w)	Group of data to be connected to the PC element connection **PARAM9** if C2=1.	–
83.141	ABL_H1L1	PC	0	B(r/w)	**A**uto **BL**ock alarms **H1** and **L1**.	See section Application Example in the functional unit manual.
84.153	ABL_H2L2	PC	0	B(r/w)	**A**uto **BL**ock alarms **H2** and **L2**.	See section Application Example in the functional unit manual.
69	PARAM1	system	–	I(r/w)	Group of data to be connected to the PC element connection **PARAM1**.	–
31	PARAM2	system	–	A24(r/w)	Group of data to be connected to the PC element connection **PARAM2**.	–
64.107	PARAM7	system	–	A32(r/w)	Group of data to be connected to the PC element connection **PARAM7** if C1=1.	–

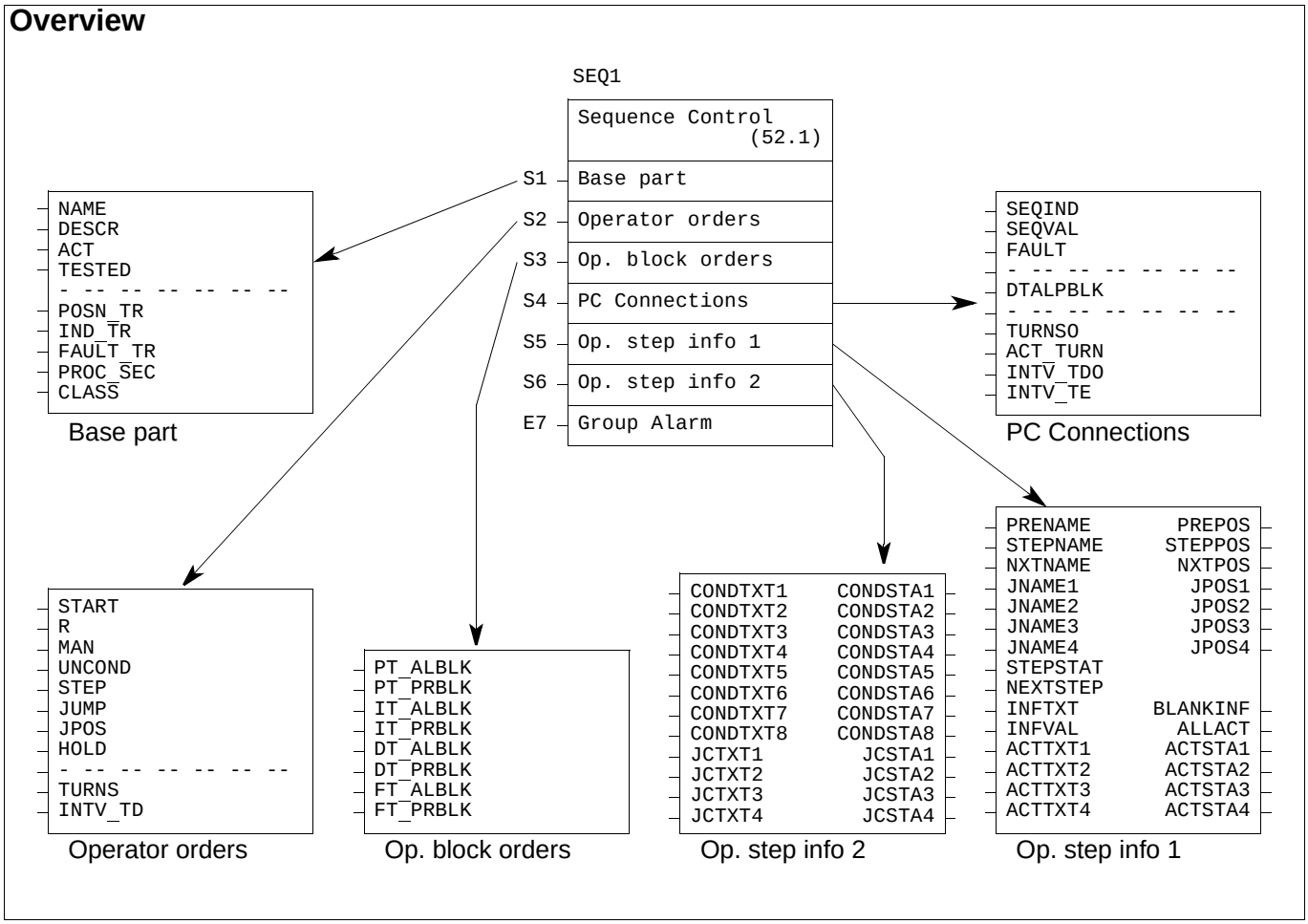
Sequence Control SEQ

Summary

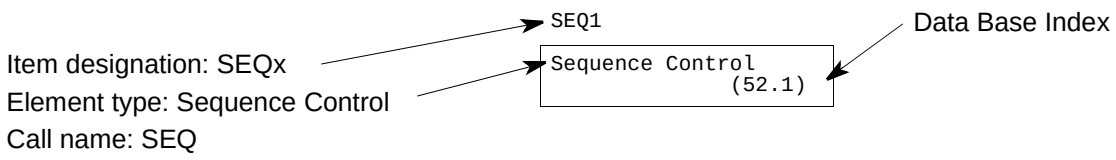
The Sequence Control data base element provides the interface between Advant Controller 400 Series and Advant Station 500 Series Operator Station to enable presentation and control from the Advant Station 500 Series Operator Station operating terminal.

For information about the extension parts of Group Alarm see data base element Group Member.

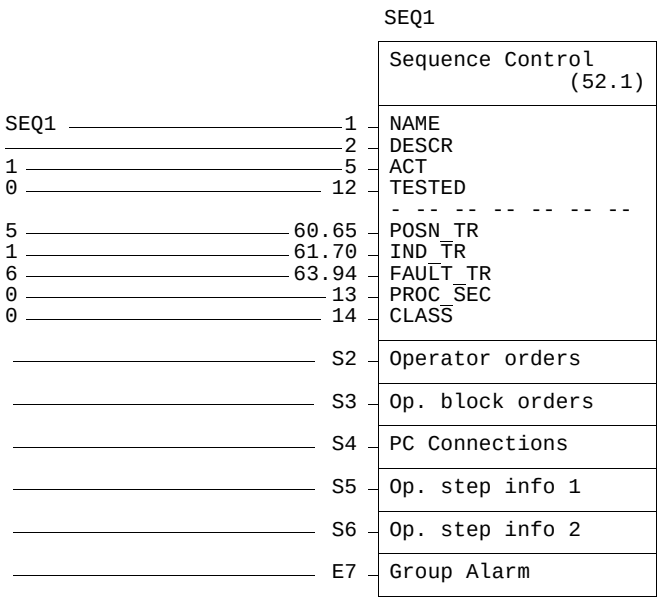
Overview



Head



Base part



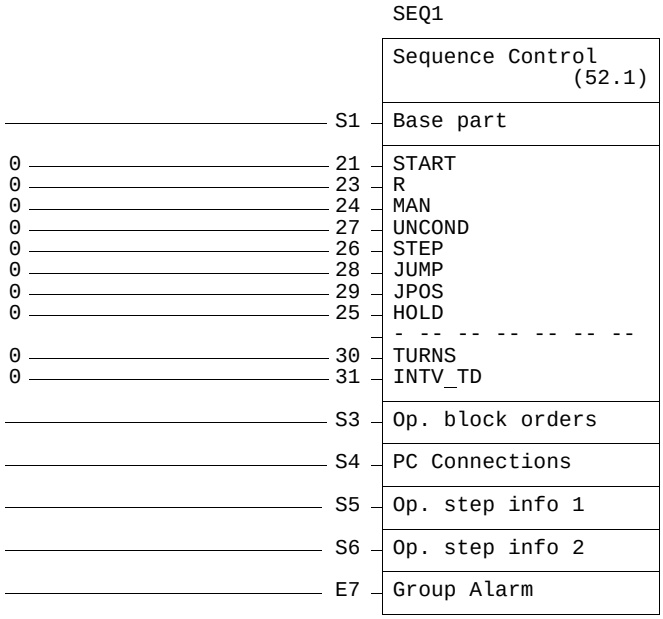
Terminal Description, Base part

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	user	SEQx	–	Each sequence must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed.
2	DESCR	user	–	–	This **DESCR**iption of the sequence will be used in pictures and lists in Operator Station.	Max. 20 characters. You may enter any information regarding the sequence.
5	ACT	user	1	B(r/w)	1=the element is **ACT**ive.	–
12	TESTED	user	0	B(r/w)	Can be set by the user to indicate that the element has been **TESTED** at start-up.	Does not affect the system.

Terminal Description, Base part (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
60.65	POSN_TR	user	5	–	**POS**itio**N TR**eatment defines the event handling in Operator Station of position changes.	Changes in the following variable is included: POS.
61.70	IND_TR	user	1	–	**IND**ication **TR**eatment defines the event handling in Operator Station of status changes.	Changes in the following variables are included: RUN, END, AUTOM, MANM, HOLDM, UNCONDM, NEXT.
63.94	FAULT_TR	user	6	–	**FAULT TR**eatment defines the event handling in Operator Station of individual faults.	Changes in the following variables are included: SEQAL, STEPAL, POSF.
13	PROC_SEC	user	0	I(r)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16.	0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.
14	CLASS	user	0	I(r)	**CLASS** subdivides process section. Used by status list function in Operator Station	–

Operator orders



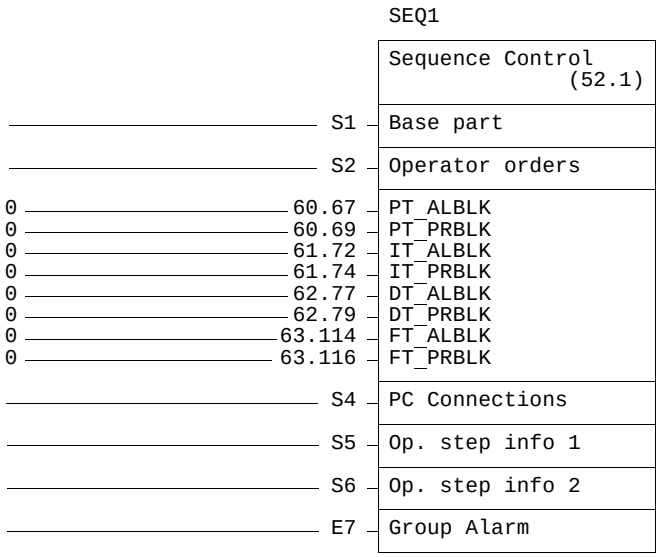
Terminal Description, Operator orders

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
21	START	dialog	0	B(r/w)	**START**s the sequence. A reset is necessary to restart.	
23	R	dialog	0	B(r/w)	**R**eset gives the sequence initial values and resets the sequence.	–
24	MAN	dialog	0	B(r/w)	**MAN** sets the sequence in manual mode.	–
27	UNCOND	dialog	0	B(r/w)	**UNCOND**itional, release the possibility to step without fulfilled step criteria.	–
26	STEP	dialog	0	B(r/w)	**STEP**s the sequence one step.	–
28	JUMP	dialog	0	B(r/w)	**JUMP** changes the active step to the step pointed out by JPOS.	–
29	JPOS	dialog	0	I(r/w)	**J**ump **POS**ition specifies the step, which will be active on a JUMP.	–

Terminal Description, Operator orders (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
25	HOLD	dialog	0	B(r/w)	**HOLD** interlocks further stepping and the sequence remains in present status, with timers stopped.	–
30	TURNS	dialog	0	I(r/w)	Number of **TURNS**, which the sequence has to run.	Turns must be used by a PC element counting the turns, if the terminal shall have any influence on the system.
31	INTV_TD	dialog	0	IL(r/w)	**INT**er**V**al **T**ime **D**elay between turns.	INTV_TD must be used by a PC element controlling the time, if the terminal shall have any influence on the system.

Op. block orders



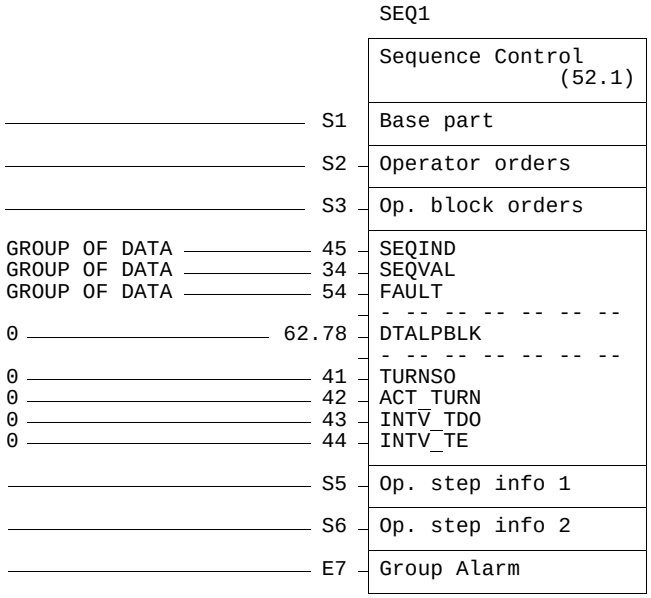
Terminal Description, Op. block orders

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
60.67	PT_ALBLK	dialog	0	–	**P**osition **T**reatment_**AL**arm **BL**oc**K**, blocks the up-dating of OS files including events caused by position changes.	–
60.69	PT_PRBLK	dialog	0	–	**P**osition **T**reatment_**PR**int **BL**oc**K**, blocks the printing of events caused by position changes.	–
61.72	IT_ALBLK	dialog	0	–	**I**ndication **T**reatment_**AL**arm **BL**oc**K**, blocks the up-dating of OS files including events caused by status changes.	–
61.74	IT_PRBLK	dialog	0	–	**I**ndication **T**reatment_**PR**int **BL**oc**K**, blocks the printing of events caused by status changes.	–
62.77	DT_ALBLK	dialog	0	–	**D**isturbance **T**reatment_**AL**arm **BL**oc**K**, blocks the up-dating of OS files including alarms caused by disturbance changes.	–

Terminal Description, Op. block orders (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
62.79	DT_PRBLK	dialog	0	–	**D**isturbance **T**reatment_**PR**int **BL**oc**K**, blocks the printing of alarms caused by disturbance and operator order changes.	–
63.114	FT_ALBLK	dialog	0	–	**F**ault **T**reatment_**AL**arm **BL**oc**K**, blocks the up-dating of OS files including the alarms caused by changes of single errors.	–
63.116	FT_PRBLK	dialog	0	–	**F**ault **T**reatment_**PR**int **BL**oc**K**, blocks the printing of alarms caused by changes of single errors.	–

PC Connections



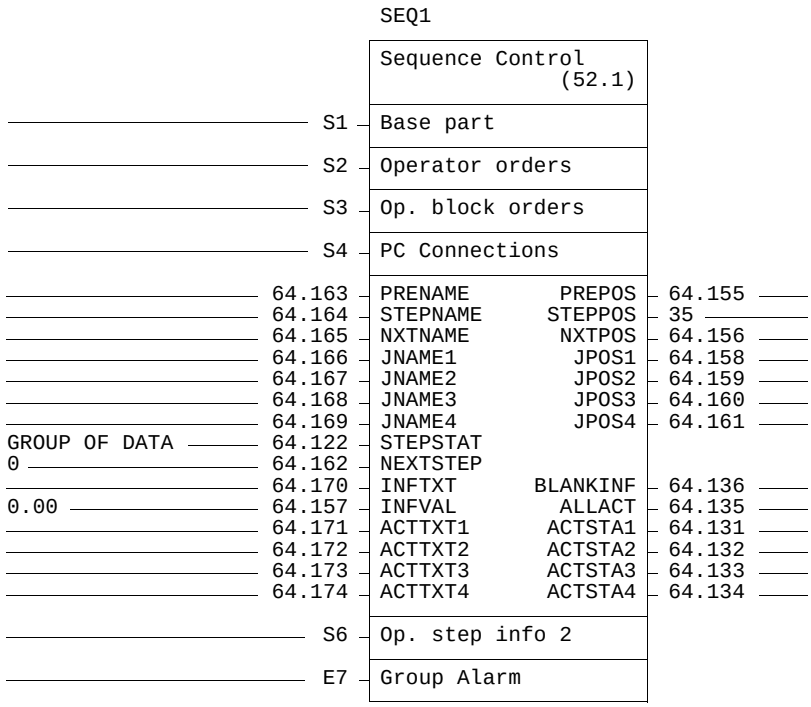
Terminal Description, PC Connections

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
45	SEQIND	system	–	I(r/w)	**SEQ**uence **IND**ication is a block terminal carrying indication information.	The following variables are included: AUTOM, MANM, HOLDM, UNCONDM, RUN, END, NEXT. This terminal has to be referred by the SEQ PC element, output SEQIND.
34	SEQVAL	system	–	A20(r/w)	**SEQ**uence **VAL**ues is a block terminal carrying value information.	The following variables are included: POS, SEQTD, SEQTE, STEPTD, STEPTE, JPOSO. This terminal has to be referred by the SEQ PC element, output SEQVAL.
54	FAULT	system	–	I(r/w)	**FAULT** is a block terminal carrying type error information.	The following variables are included: SEQAL, STEPAL, POSF. This terminal has to be referred by the SEQ PC element, output FAULT.

Terminal Description, PC Connections (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
62.78	DTALPBLK	system	–	B(r/w)	**D**isturbance **T**reatment **AL**arm **P**eriod **BL**oc**K**, blocks updating and printout in Operator Station, including summation errors.	The terminal can be referred by any PC element, which then has the blocking power.
41	TURNSO	system	–	I(r/w)	**TURNS O**utput is the indication terminal of turns.	The terminal is referred by the PC element counting the turns, if the function is utilized.
42	ACT_TURN	system	–	I(r/w)	**ACT**ual_**TURN** is the indicating terminal of the actual turn.	The terminal is referred by the PC element counting the turns, if the function is utilized.
43	INTV_TDO	system	–	IL(r/w)	**INT**er**V**al **T**ime **D**elay **O**utput is the indicating terminal of interval time delay.	The terminal is referred by the PC element controlling the interval time, if the function is utilized.
44	INTV_TE	system	–	IL(r/w)	**INT**er**V**al **T**ime **E**lapsed is the indicating terminal of interval time elapsed.	The terminal is referred from the PC element counting the interval time if the feature is utilized.

Op. step info 1



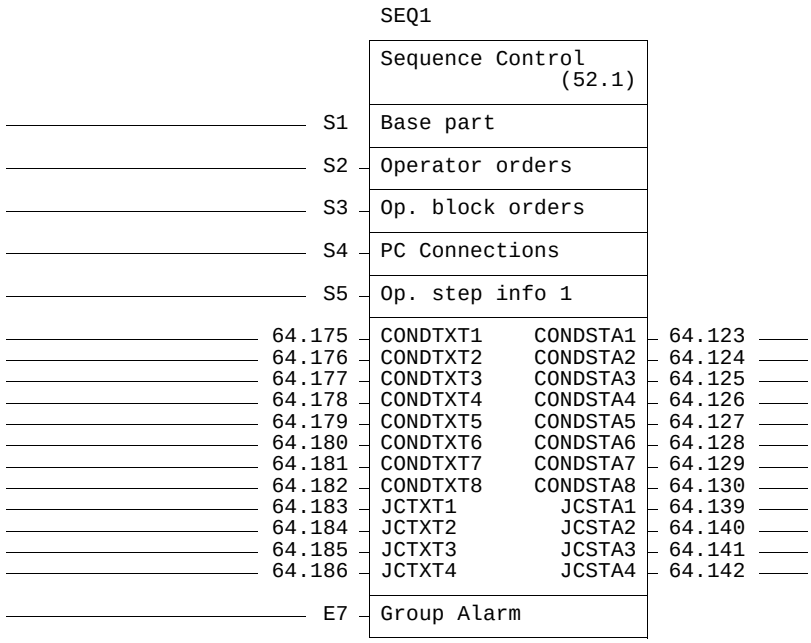
Terminal Description, Op. step info 1

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
64.163	PRENAME	system	–	–	**PRE**vious step **NAME**.	–
64.164	STEPNAME	system	–	–	Current **STEP NAME**.	–
64.165	NXTNAME	system	–	–	**N**e**XT** step **NAME**.	–
64.166 : 64.169	JNAMEx	system	–	–	**J**ump **NAME x**. For x=1 - 4. Name of the step to which a jump will take place if condition x is fulfilled.	–
64.122	STEPSTAT	PC	–	IL(r/w)	**STEP STAT**us. To be connected to the PC element STEP.	–
64.162	NEXTSTEP	PC	0	IL(r/w)	**NEXT STEP**. No of next step by manual mode jumping. A zero value means that no jump condition is fulfilled.	–

Terminal Description, Op. step info 1 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
64.170	INFTXT	system	–	–	**INF**ormation **TeXT**.	–
64.157	INFVAL	PC	0.00	R(r/w)	**INF**ormation **VAL**ue. Value associated with INFTXT.	Two decimals displaying.
64.171 : 64.174	ACTTXTx	system	–	–	**ACT**ivity **TeXT x**. For x=1 - 4. Text describing activity x for current step.	–
64.155	PREPOS	system	–	–	**PRE**vious **POS**ition. No. of previous step.	–
35	STEPPOS	system	–	–	Current **STEP POS**ition. No. of current step.	–
64.156	NXTPOS	system	–	–	**NeXT** step **POS**ition. No. of next step.	–
64.158 : 64.161	JPOSx	system	–	–	**J**ump **POS**ition **x**. For x=1 - 4. Position of the step to which a jump will take place if condition x is fulfilled.	–
64.136	BLANKINF	system	–	–	**BLANK INF**ormation text and value. Erases information text and value. (INFTXT and INFVAL).	–
64.135	ALLACT	system	–	–	**ALL ACT**ivities are finished.	–
64.131 : 64.134	ACTSTAx	system	–	–	**ACT**ivity **STA**tus **x**. For x=1 - 4. Activity x is finished.	–

Op. step info 2



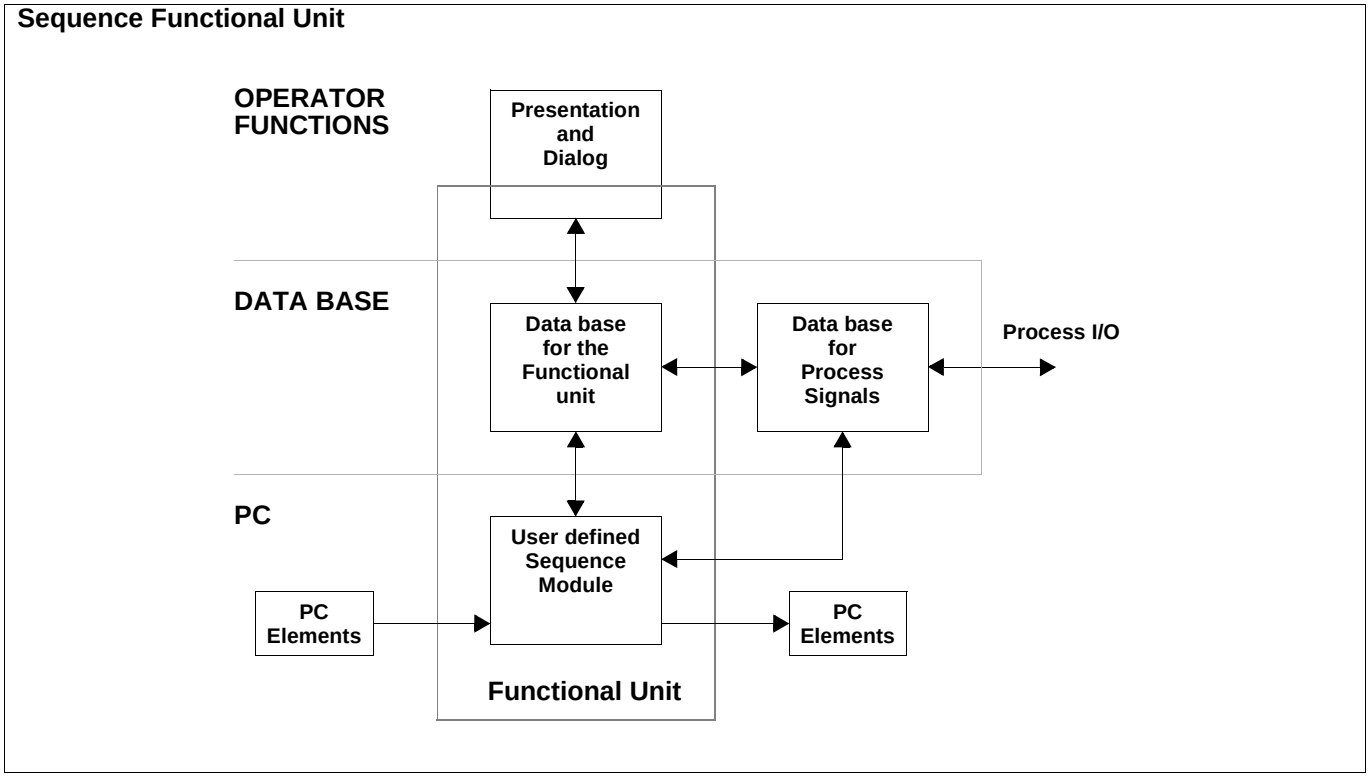
Terminal Description, Op. step info 2

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
64.175 : 64.182	CONDTXTx	system	–	–	Transition **COND**ition **T**e**XT** **x**. For x=1 - 8. Text describing transition condition x for current step.	–
64.183 : 64.186	JCTXTx	system	–	–	**J**ump **C**ondition **T**e**XT** **x**. For x=1 - 4. Text describing jump condition x for current step.	–
64.123 : 64.130	CONDSTAx	system	–	–	Transition **COND**ition **STA**tus **x**. For x=1 - 8. Transition condition x is fulfilled.	–
64.139 : 64.142	JCSTAx	system	–	–	**J**ump **C**ondition **STA**tus **x**. For x=1 - 4. Jump condition x is fulfilled.	–

Function

The Sequence Control data base element is part of the SEQuence functional unit described in the manual *ABB Master Functional Units Part 3 SEQ GROUP.*

It is composed by three parts as shown in the figure below.



a) The PC-part contains two structure elements, SEQ and STEP. These two structure elements are the sequence controller and the step controller, which define the sequence together with other standard PC-elements. The PC-programming principles are the same for SEQ and STEP as for all PC-elements of ABB Advant Controller 400 Series.

b) The man-machine-communication – MMC – part fulfills two tasks, the CRT and printer presentation and the operator interaction. The printer can be used for alarm and event lists.

   The CRT-displays present orders, status and parameters involved in a sequence. The keyboard is the MMC functions input tool used by the operator. The displays are standardized and the specific data of a sequence are set in a simple and standard manner.

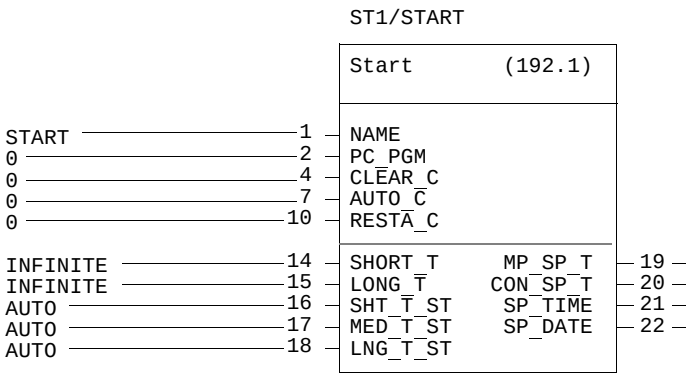
c) The data base part is the interface between the PC-part and the Operator functions part containing both dynamic and static sequence data.

Start START

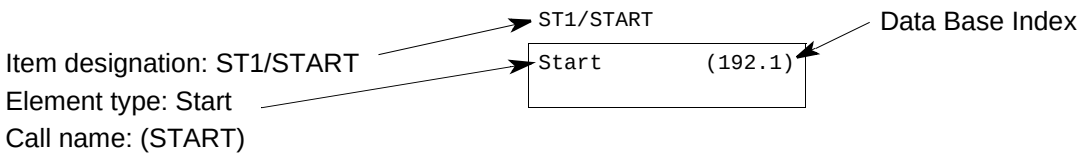
Summary

The values of the Start data base element can be used to specify the behavior of the system at start and at restart after a power failure.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	predef	START	–	Start. **NAME** of element.	–
2	PC_PGM	user	0	I(r)	The **PC** **P**ro**G**ra**M** terminal determines the PC program in which the control modules that are to be used at start are stored.	–

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
4	CLEAR_C	user	0	I(r)	The **CLEAR C**ontrol terminal determines which execution unit that is to be executed when the CLEAR start option is used.	–
7	AUTO_C	user	0	I(r)	The **AUTO C**ontrol terminal determines which execution unit that is to be executed when the AUTO start option is used.	–
10	RESTA_C	user	0	I(r)	The **RESTA**rt **C**ontrol terminal detemines which execution unit that is to be executed at restart after a power failure.	–
1	SHORT_T	user	INFINITE	IL(r)	The **SHORT T**ime terminal determines the upper time limit of the first time period.	Time given in seconds only. The default value is infinite, that is there is no upper time limit.
15	LONG_T	user	INFINITE	IL(r)	The **LONG T**ime terminal determines the lower time limit of the last time period.	Time given in seconds only. The default value is infinite, that is there is no lower time limit.
16	SHT_T_ST	user	AUTO	I(r)	The **SH**or**T T**ime **ST**art terminal determines the restart option for the first time period.	Possible options are: clear, stop, auto and restart.
17	MED_T_ST	user	AUTO	I(r)	The **MED**ium **T**ime **ST**art terminal determines the restart option for the second time period.	Possible options are: clear, stop, auto and restart.
18	LNG_T_ST	user	AUTO	I(r)	The **L**o**NG T**ime **ST**art terminal determines the restart option for the last time period.	Possible options are: clear, stop, auto and restart.
19	MP_SP_T	system	–	R(r)	The **M**aster**P**iece **S**to**P T**ime terminal indicates how much time has elapsed since power failure.	Time given in whole seconds.
20	CON_SP_T	system	–	R(r)	The **CON**trol **S**to**P T**ime terminal indicates how much time elapsed between power failure and the moment when the process could be controlled again.	Time is given in whole seconds. The time is available when the restart module is executed.
21	SP_TIME	system	–	IL(r)	The **S**to**P TIME** terminal contains the calendar time of the moment when the power failure occurred.	–
22	SP_DATE	system	–	IL(r)	The **S**to**P DATE** terminal contains the calendar date of the moment when power fail occurred.	–

Function

Programmed start is described in the programming manual. The function enables the user to specify the behavior of the system at start and restart after a power failure through a PC program.

Parameters

The following substitutions may be made when programming:

S for STOP

C for CLEAR

A for AUTO

R for RESTART.

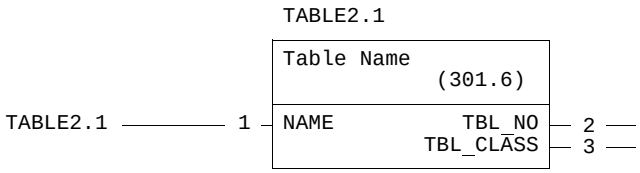
Table Name TABLE

Summary

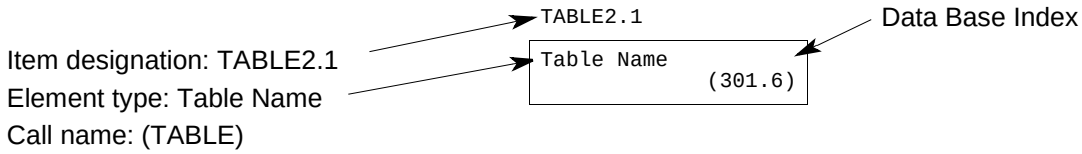
The Table Name data base element holds the table name and number. It can be used to find the corresponding number (or name) for a certain table name (or number). The name must be unique in the system.

The element is subordinated to the Table Class data base element and is automatically created when the class is created.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	TABLEx.y	–	Each table must have a unique **NAME** within the application.	Max. 20 characters. Spaces are not allowed.
2	TBL_NO	system	0	–	Number of this table within the class.	–
3	TBL_CLASS	system	–	–	Name of the class to which this table belongs.	–

Table Class TBL_CLASS

Summary

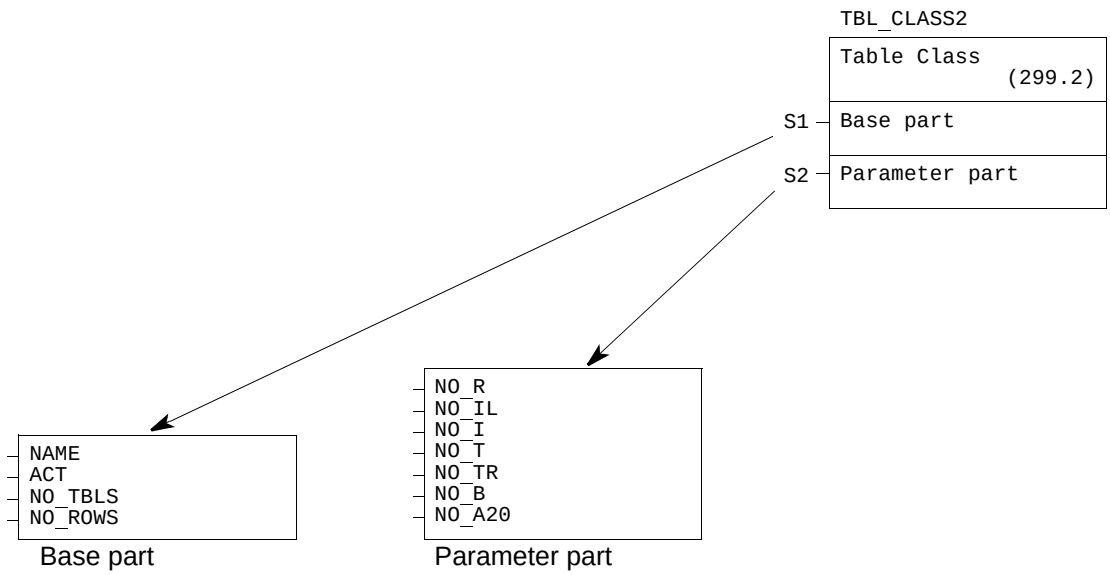
The Table Class data base element defines the structure of a class of tables. It holds data about table size, number of tables, number of parameters of different data types, etc. All tables within a class have exactly the same structure.

The element is superior to the Table Name and Table Parameter data base elements realizing the class. These subordinated Table Name and Table Parameter elements are automatically created, when the Table Class element is created.

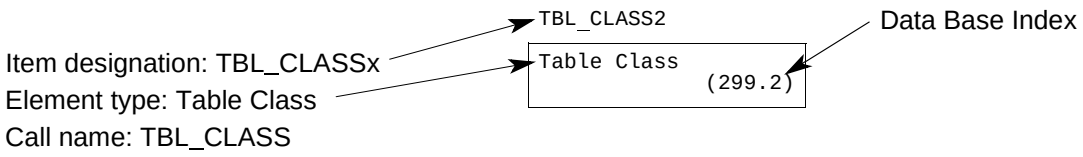
Once created, the size of a class cannot be modified. The only way to get rid of a table, is to delete the whole table class.

A brief description of the table handling functions is found in section “Function”.

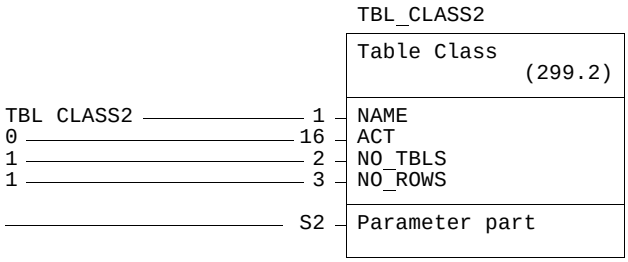
Overview



Head



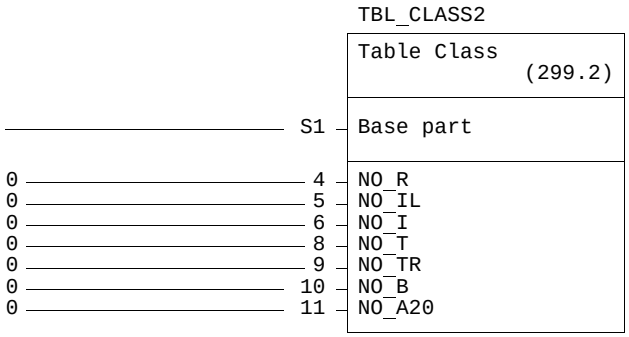
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	TBL_ CLASSx	–	Each Class must have a unique **NAME** within the system.	Max. 20 characters. Spaces are not allowed.
16	ACT	user	0	–	1=class **ACT**ivated 0=not activated	–
2	NO_TBLS	user	1	–	**N**umber **O**f **T**a**BL**e**S** in this class.	Value can not be changed if this element is already created.
3	NO_ROWS	user	1	–	**N**umber **O**f **ROWS** for each table.	Value can not be changed if this element is already created.

Parameter part



Terminal Description, Parameter part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
4	NO_R	user	0	–	**N**umber **O**f parameters of type **R**eal in each row of this class.	–
5	NO_IL	user	0	–	**N**umber **O**f parameters of type **I**nteger **L**ong in each row of this class.	–
6	NO_I	user	0	–	**N**umber **O**f parameters of type **I**nteger in each row of this class.	–
8	NO_T	user	0	–	**N**umber **O**f parameters of type **T**ime in each row of this class.	–
9	NO_TR	user	0	–	**N**umber **O**f parameters of type **T**ime **R**eal in each row of this class.	–
10	NO_B	user	0	–	**N**umber **O**f parameters of type **B**oolean in each row of this class.	–
11	NO_A20	user	0	–	**N**umber **O**f parameters of type **A20** (text with 20 characters) in each row of this class.	–

Function

Introduction

A set of data base and PC elements are provided for storage and handling of large amounts of structured data in tables. The table structure is defined with the data base elements Table Class, Table Name and Table Parameter. The table data are stored in a separate data base file (logical file 302), and can only be accessed via the PC-elements TBL-R, TBL-W, TBL-RG and TBL-WG. For further information regarding these elements, please see the manual *PC Elements Advant Controller 400 Series Reference Manual*.

Table Structure

The stored data are organized in tables, structured in four levels like this:

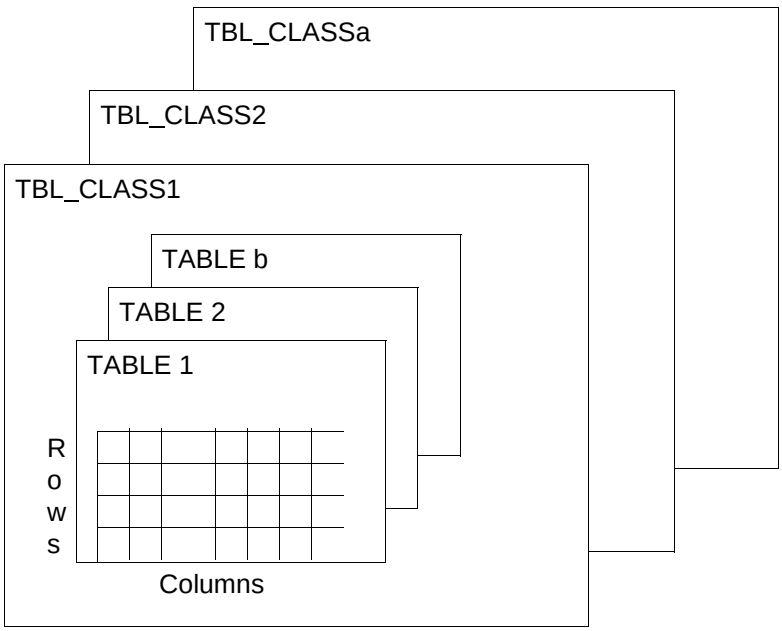
Table classes

Tables

Rows

Columns

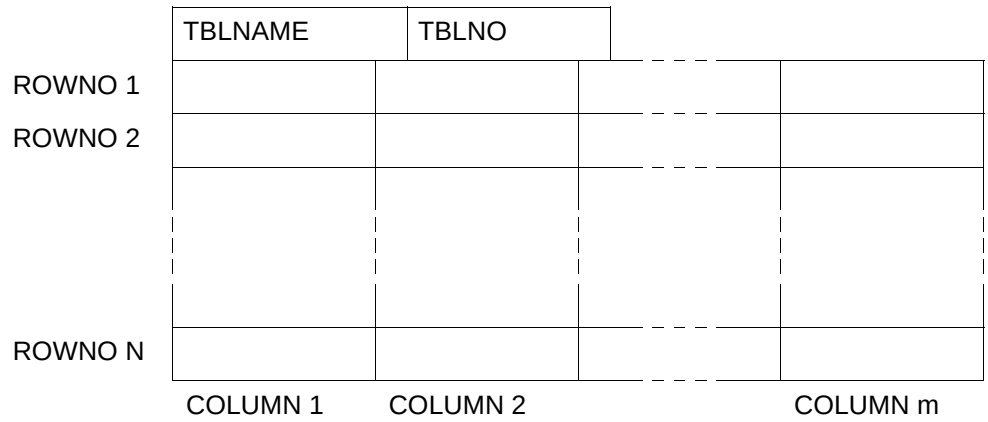
Table Organization



Within a class, there is one Table Parameter element to handle one column of data in all tables.

All tables of the same class are equal in structure and size. Every table has a name, unique within the application, and a number, unique within the class. The table structure is shown below:

Structure of One Table



The data items in a row can consist of any mixture of data types. Within a column, however, all items must have the same data type.

Example

Imagine a table class named ”Exchange_Rates”. It contains a number of tables, each one having three parameters: the currencies and their sale and buying rates offered by a certain bank. The number of rows (=max number of currencies) is 50. A table in such a class could be like this:

Example, MasterBank Exchange Table

	MasterBank	45	
ROWNO 1	USD	5.9889	6.0023
ROWNO 2	DEM	3.7789	3.784
ROWNO 50	NKK	0.956	0.9609
	COLUMN 1	COLUMN 2	COLUMN m

Application program

The figure to the right describes how an application uses the table data base.

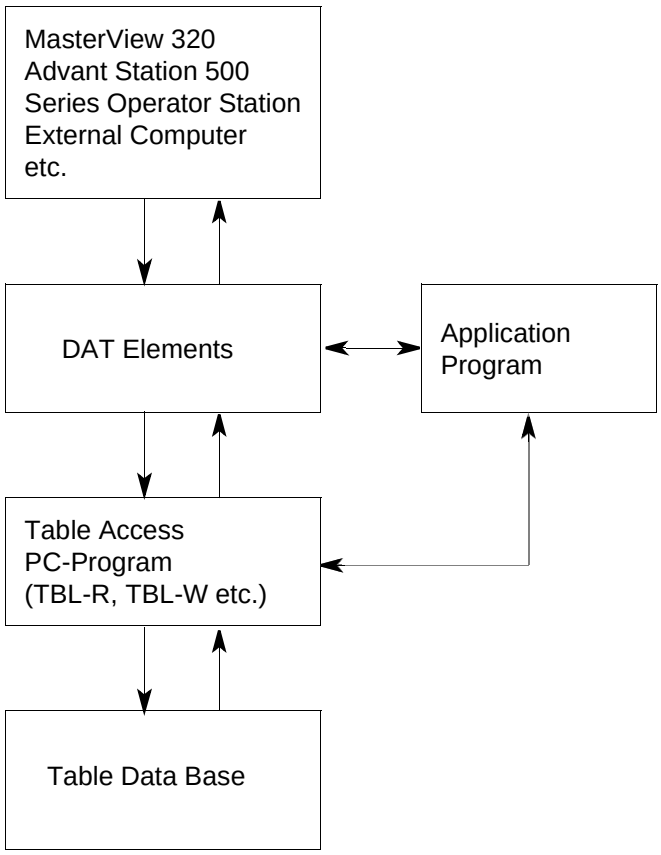
The data in a table can be accessed in three different ways:

- Single data items can be read and written using the PC elements TBL-R and TBL-W respectively.
- A number of consecutive data items in the same column can be read and written using the PC-elements TBL-R and TBL-W respectively.
- Using the PC-elements TBL-RG and TBL-WG several parameters of different data types can be accessed simultaneously.

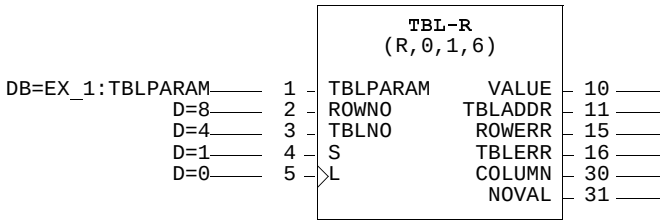
The PC-elements are connected to the required Table Parameter data base element via the terminal TBLPARAM. The data that are to be accessed are pointed out by giving the required table and row number on the inputs TBL_NO and ROW_NO respectively.

The following example shows how a PC-program reads six real values starting from row number 8 in table number 4. The parameter name is ”EX_1”. The data are available as group data at the COLUMN output.

View of the Table Data Base from the Application Program



Example, Application Program



Dumping and Loading of Tables

Both table data and structure description are included in the application dumps taken with the DUAP command or in the data base dumps with the DUTDB command. Table data can be dumped separately using the DUDB command.

Table data can also be dumped and loaded in data base source code format with the commands DUDBS and TRDBS. If you use DUDBS together with the switch /TBL, the complete table data will be included in the dump of data base element TBL_PARAM. In contrast to a normal dump without switch /TBL, the terminals TBL_NO, ROW_NO, and VALUE are repeatedly dumped depending on the size and number of the tables, where the VALUE terminals are holding the data. Source code including table data is loaded with TRDBS. TRDBS automatically detects the table data and will correctly fill the data base.

The commands are described in the manual *AMPL Configuration Advant Controller 400 Series User's Guide*. A detailed description of the source code can be found in the manual *ABB Master Source Code Handling User's Guide*.

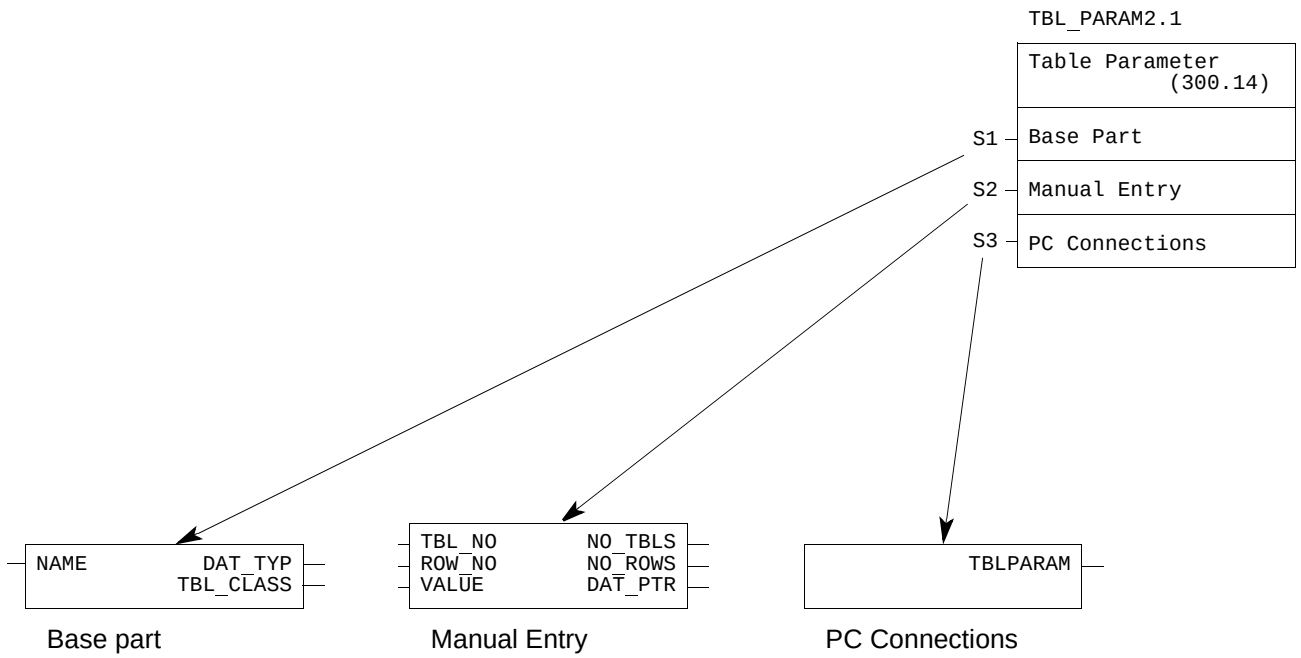
Table Parameter TBL_PARAM

Summary

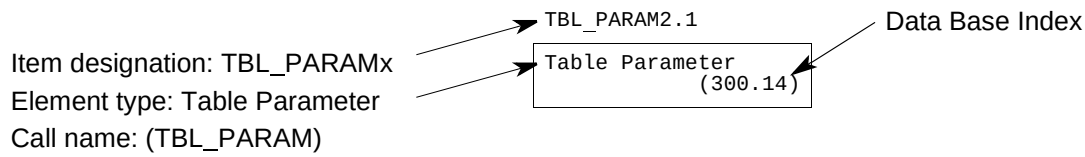
The Table Parameter data base element is used to connect the table data to a PC-program and for manual entry of values into the table data structure.

The element is subordinated to the Table Class data base element and is automatically created when the class is created.

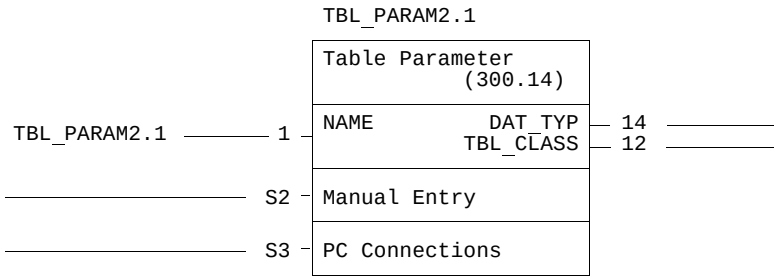
Overview



Head



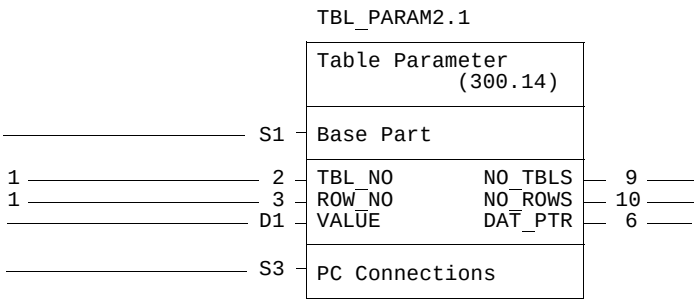
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	TBL_ PARAMx.y	–	Each PARAM must have a unique **NAME** within the table class.	Max. 20 characters. Spaces are not allowed.
14	DAT_TYP	system	–	–	**DAT**a **TYP**e for this parameter.	–
12	TBL_CLASS	system	–	–	Name of this **TaBL**e **CLASS**.	–

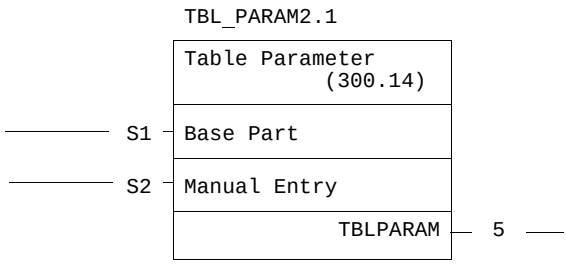
Manual Entry



Terminal Description, Manual Entry

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	TBL_NO	user	1	–	**N**umber **O**f the desired **TaBL**e.	–
3	ROW_NO	user	1	–	**N**umber **O**f the desired **ROW**.	–
D1	VALUE	user	–	–	Enter **VALUE** of the item pointed out by TBL_NO and ROW_NO.	–
9	NO_TBLS	system	–	–	**N**umber **O**f **TaBL**e**S** in this class.	–
10	NO_ROWS	system	–	–	**N**umber **O**f **ROWS** in each table.	–
6	DAT_PTR	system	–	–	Reference to the storage of the values of this parameter.	–

PC Connections



Terminal Description, PC Connections

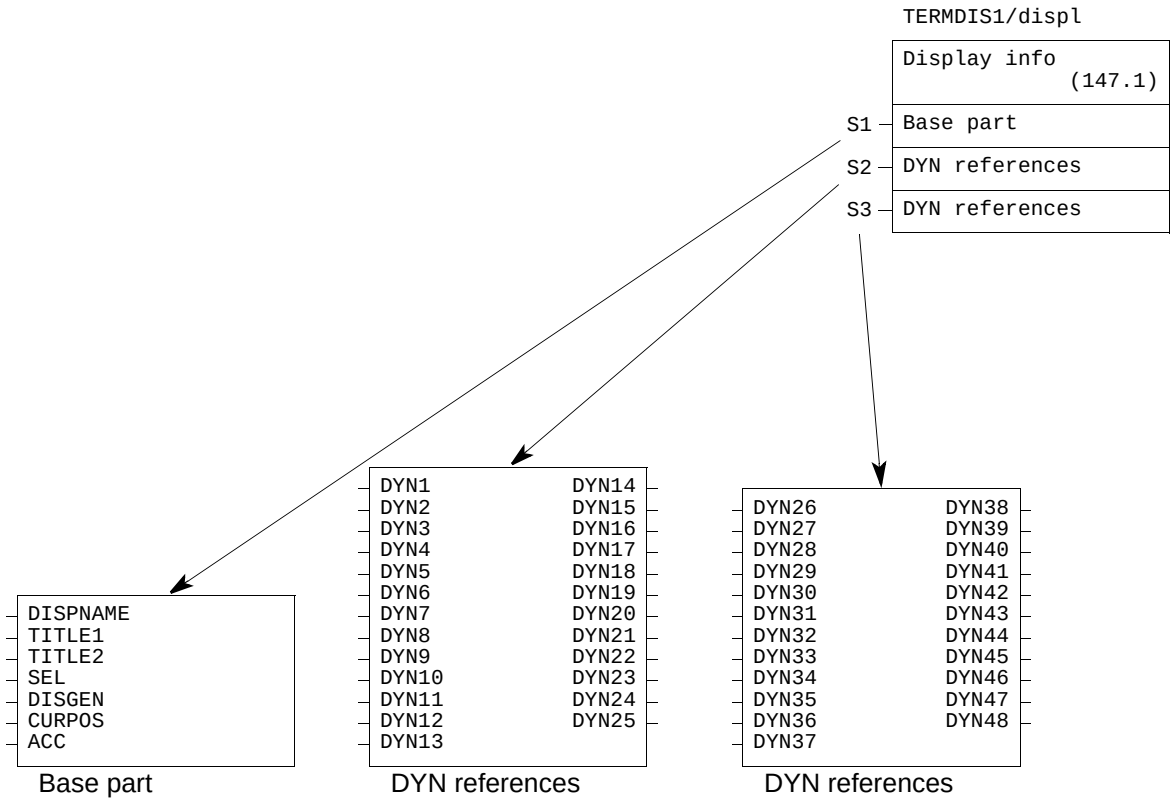
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
5	TBLPARAM	system	–	G	Group of data to be connected to the terminal **TBLPARAM** of the PC element TBL-R, TBL-W, TBL-RG or TBL-WG.	–

Display info TERMDIS

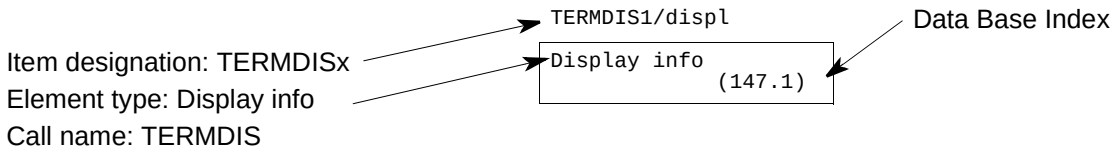
Summary

The Display info data base element contains information about one MasterView 320 display.

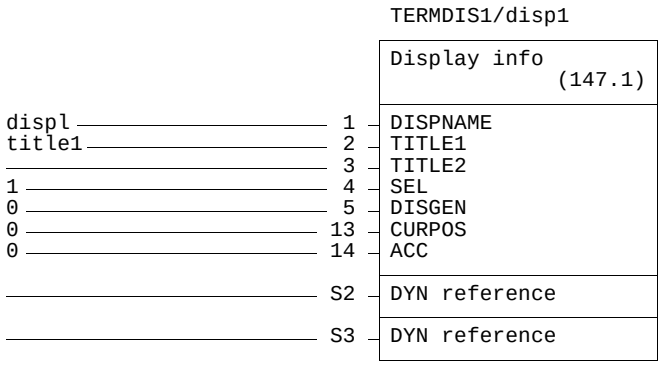
Overview



Head



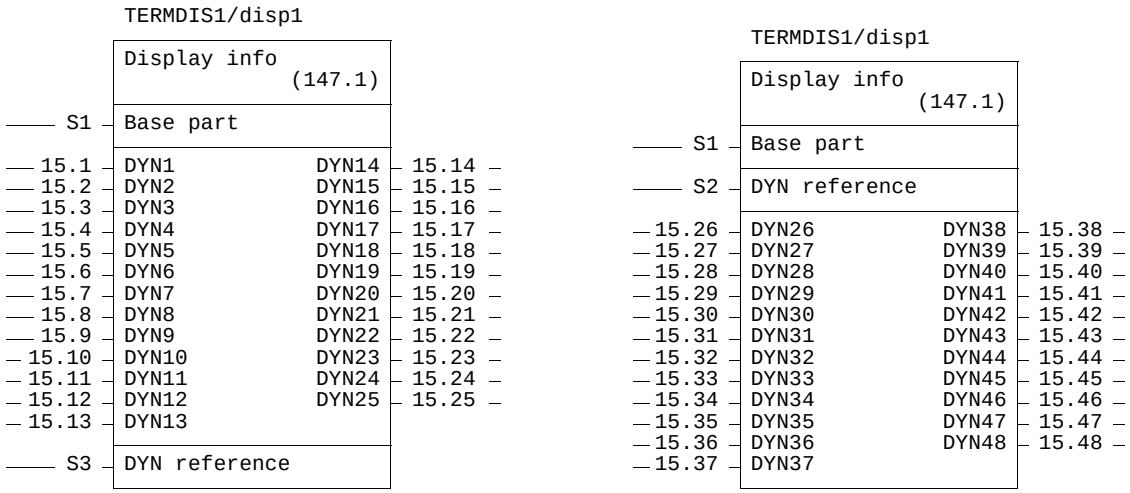
Base part



Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	DISPNAME	system (MV320)	–	A12(r/w)	**DISP**lay **NAME**.	Maximum 12 characters, spaces not allowed
2	TITLE1	system (MV320)	–	A15(r/w)	Display **TITLE**.	The complete title of a display may consist of up to 30 characters, spaces included.
3	TITLE2	system (MV320)	–	A15(r/w)	Continue of display **TITLE**.	–
4	SEL	system (MV320)	0	I(r/w)	Number of **SEL**ections.	The number of terminals (VDU:s) showing this display.
5	DISGEN	system (MV320)	0	B(r/w)	**DIS**play **GEN**eration.	1=the display is being generated. 0=the display is complete.
13	CURPOS	system (MV320)	0	B(r/w)	**CUR**sor **POS**ition. Home.	Dynamic variable that determines in which position on the display the cursor will appear when the display is put out.
14	ACC	system (MV320)	0	I(r/w)	MV320 terminal that can ”**ACC**ess”.	Terminals which can show this display: 0 no terminals 1 a terminal 2 2 terminal 1 and 2 511 all terminals

Dynamic references



One display may contain a maximum of 48 dynamic values

Terminal Description, Dynamic references

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
15(1)	DYN1	system (MV320)	–	–	Reference to a specific TERMDYN data base element (TERM**DYNx**).	The TERMDYNx element contains information about the dynamic value in the display.
15(2)	DYN2	system (MV320)	–	–	Reference to another TERMDYN element (TERM**DYNy**).	–
:	:	:	:	:	:	:
15(48)	DYN48	system (MV320)	–	–	Reference to another TERMDYN element (TERM**DYNy**).	–

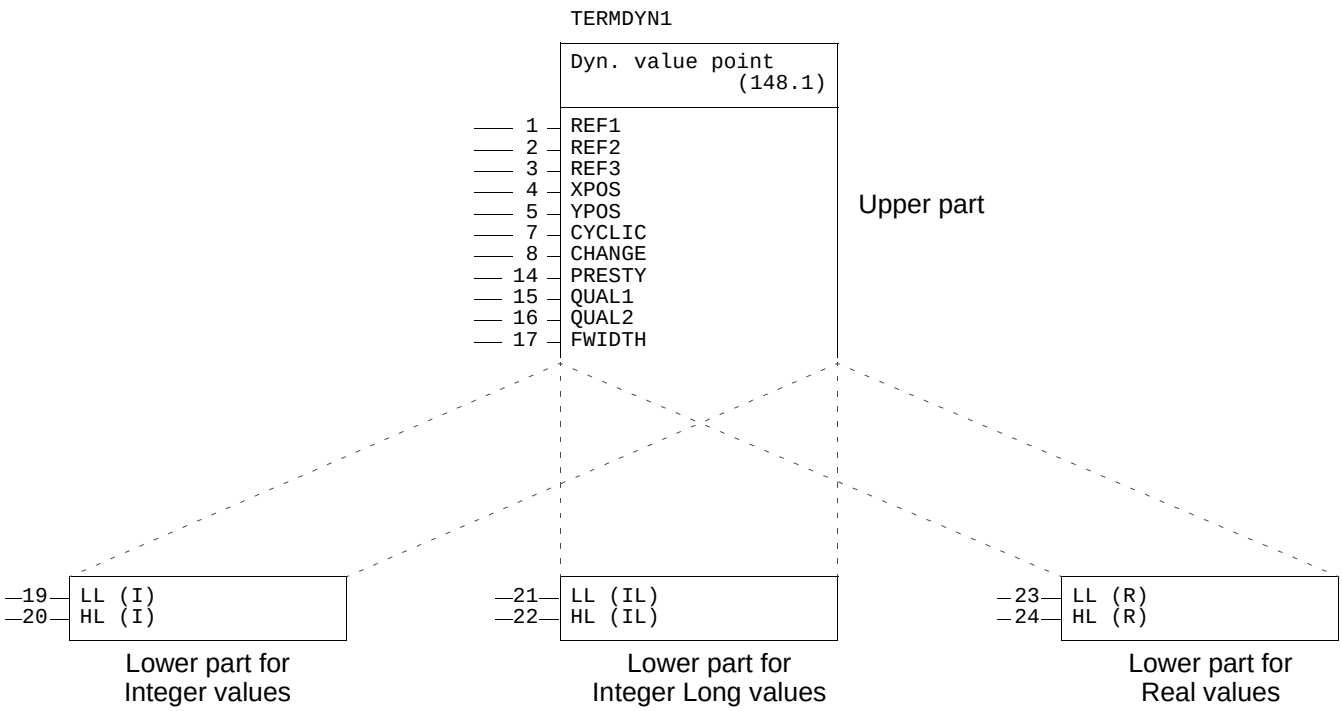
Dyn. value point TERMDYN

Summary

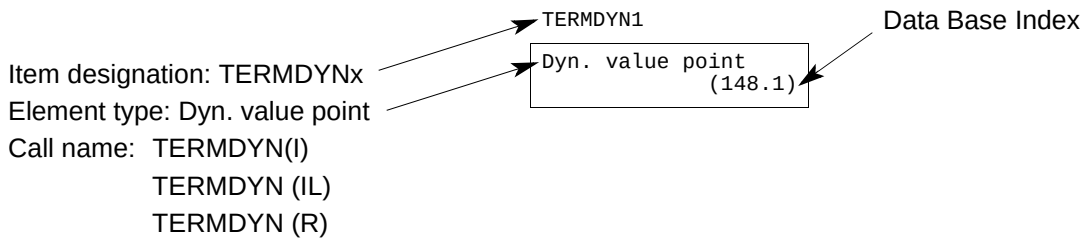
The Dynamic value point data base element contains information about a dynamic value point.

There are three versions of the lower part of the element. The version to be used is determined by the data type of the dynamic value.

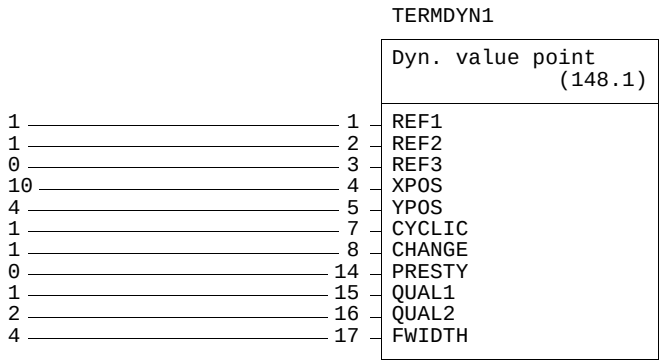
Overview



Head



Upper part



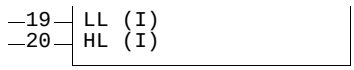
Terminal Description, Upper part

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	REF1	system (MV320)	–	–	**REF**erence to a specific DAT data base element (DATx).	The DATx element contains the current dynamic value.
2	REF2	system (MV320)	–	–	**REF**erence to a specific terminal within a DAT(B) data base element.	If DATx is of Boolean type, this reference points out 1 of the 32 Boolean values within DATx.
3	REF3	system (MV320)	–	–	Concept.	Not yet used.
4	XPOS	system (MV320)	0	I(r/w)	**X**-**POS**ition for the first character of the dynamic value.	X-POS=column number. Available column numbers 1-80.
5	YPOS	system (MV320)	0	I(r/w)	**Y**-**POS**ition for the dynamic value.	Y-POS=line number. Lines 4-19 can be used.
7	CYCLIC	system (MV320)	0	B(r/w)	**CYCLIC**ally updated.	1=the value is updated every second. 0=no updating will be performed.
8	CHANGE	system (MV320)	0	B(r/w)	**CHANGE**able by operator.	1=the value can be changed by operators dialog.
14	PRESTY	system (MV320)	0	I(r/w)	**PRES**entation **TY**pe.	Output presentation type: 0 – no special presentation 1 – inverse video 2 – underscore 4 – blinking 8 – half intensity

Terminal Description, Upper part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
15	QUAL1	system (MV320)	–	–	Presentation format of Boolean value.	0=representation 0, 1. 1 - 20=representation of Boolean value False (=0) in accordance with the corresponding STR terminal in the TERMGEN1 element.
16	QUAL2	system (MV320)	–	–	Presentation format of Boolean or real value.	For Boolean values this terminal means the representation of Boolean value True in accordance with the corresponding STR terminal in the TERMGEN1 element. For real dynamic values this terminal means: **QUAL2**<0 The field width used in the representation of the dynamic value in exponential form, for example for QUAL2=2 the value –0.31415 will be represented by –3.14E-01. **QUAL2** ≥ 0 The number of decimals used in the presentation of the dynamic value in non exponential form. For QUAL2=2 the value 3.1415 will be presented as 3.14. For integer-long variables, this terminal means: 0 – display as normal integer 1 – display as character(s) 2 – display as time
17	FWIDTH	system (MV320)	–	–	**F**ield **WIDTH** to be reserved for the dynamic value point in the display.	Maximum field width (the total number of characters and spaces): Boolean value 2 Integer value 6 Long integer value 11 Real exponential value 13 Real decimal value 21 Character 4 Time 8

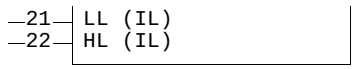
Lower part, TERMDYN(I)



Terminal Description, Lower part, TERMDYN(I)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
19	LL(I)	system (MV320)	0	I(r/w)	**L**ow **L**imit for displayed value.	The DAT element referred to by the REF1 terminal is of Integer type.
20	HL(I)	system (MV320)	0	I(r/w)	**H**igh **L**imit for displayed value.	–

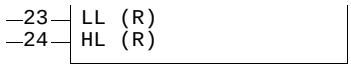
Lower part, TERMDYN(IL)



Terminal Description, Lower part, TERMDYN(IL)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
21	LL(IL)	system (MV320)	0	IL(r/w)	**L**ow **L**imit for displayed value.	The DAT element referred to by the REF1 terminal is of Integer Long type.
22	HL(IL)	system (MV320)	0	IL(r/w)	**H**igh **L**imit for displayed value.	–

Lower part, TERMDYN(R)



Terminal Description, Lower part, TERMDYN(R)

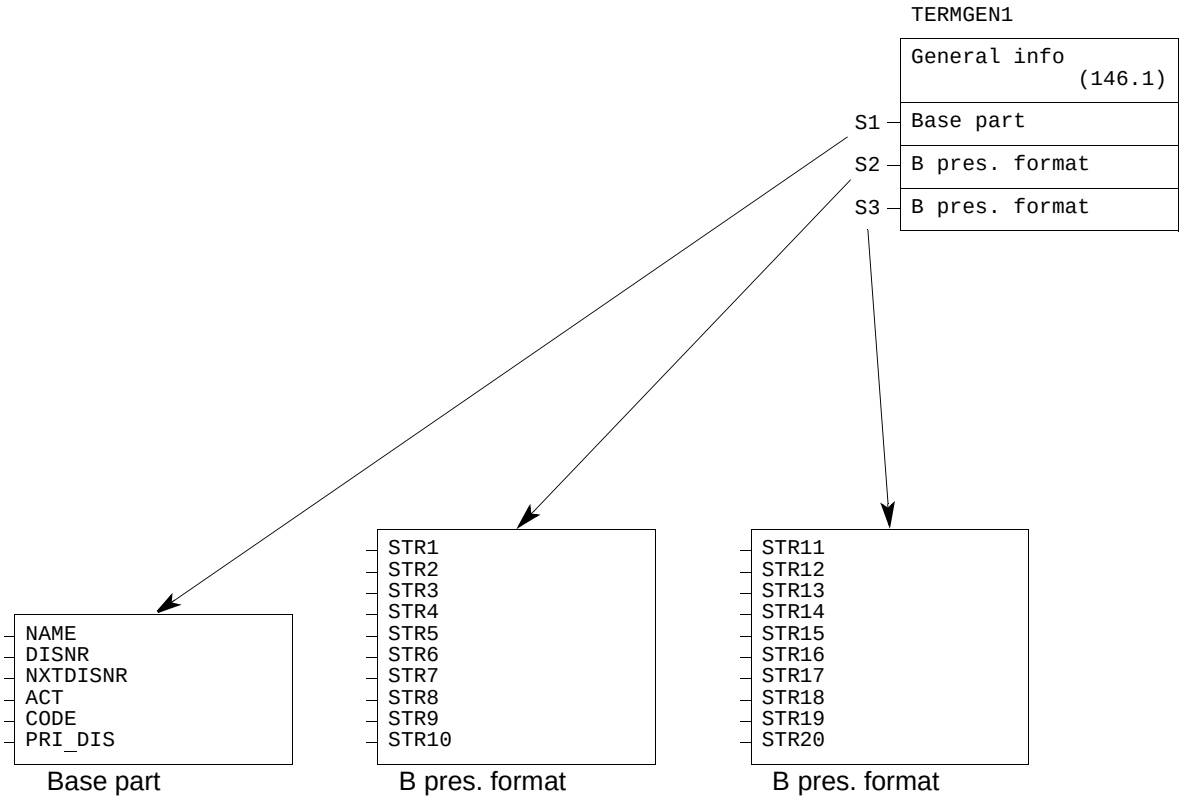
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
23	LL(R)	system (MV320)	0	R(r/w)	**L**ow **L**imit for displayed value.	The DAT element referred to by the REF1 terminal is of Real type.
24	HL(R)	system (MV320)	0	R(r/w)	**H**igh **L**imit for displayed value.	–

General info TERMGENA, TERMGENB

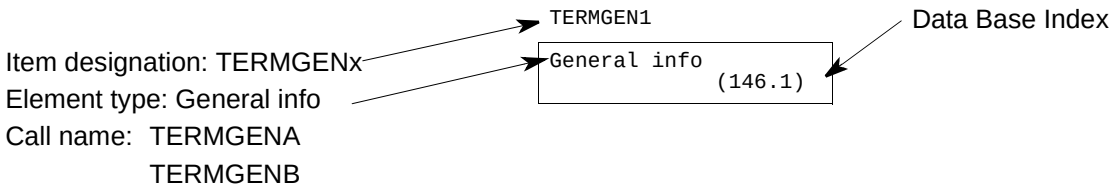
Summary

The General info data base element contains general information about the MasterView 320 terminal.

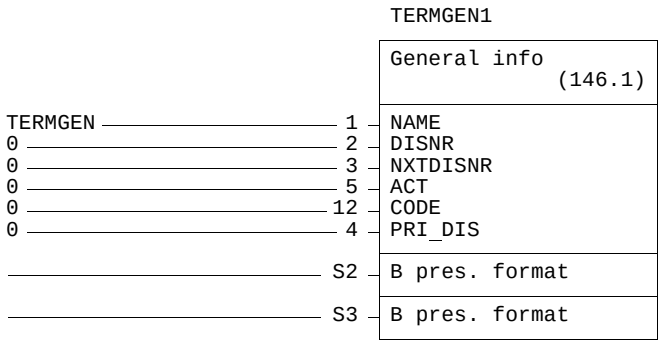
Overview



Head



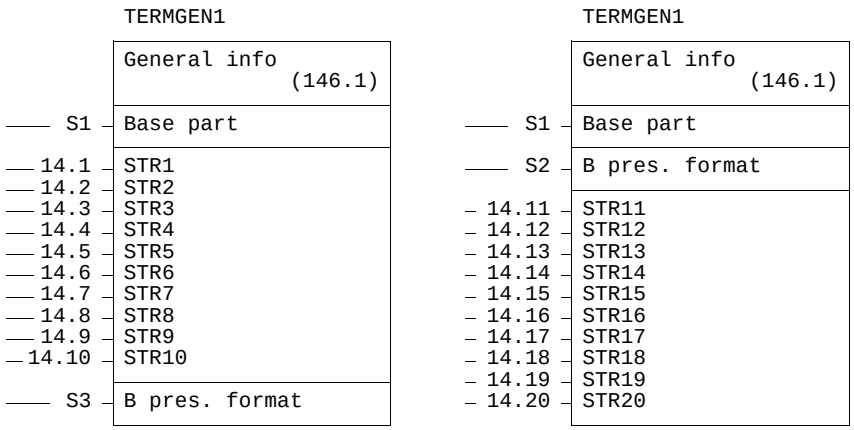
Base part



Terminal Description, Base part

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	user	–	–	Each General info element must have a unique **NAME**.	Maximum 12 characters, spaces not allowed
2	DISNR	system (MV320)	0	I(r/w)	**DIS**play **N**umbe**R**.	The number of the current display in MV320.
3	NXTDISNR	system (PC)	0	I(r/w)	**N**e**XT DIS**play **N**umbe**R**.	The number of the next display in MV320.
5	ACT	system (PC)	0	B(r/w)	1=input from terminal key (MV320) **ACT**ivated.	–
12	CODE	system (MV320)	0	I(r/w)	Input key **CODE** from terminal (MV320).	In ASCII or in decimal if keypad 0-9 is pressed.
4	PRI_DIS	system (PC)	0	B(r/w)	**PRI**nt current **DIS**play.	Causes the current display to be printed.

Boolean presentation format



With this part of the data base element you define the presentation formats of Boolean data. This part exists in the first General info element only.

Terminal Description, Boolean presentation format

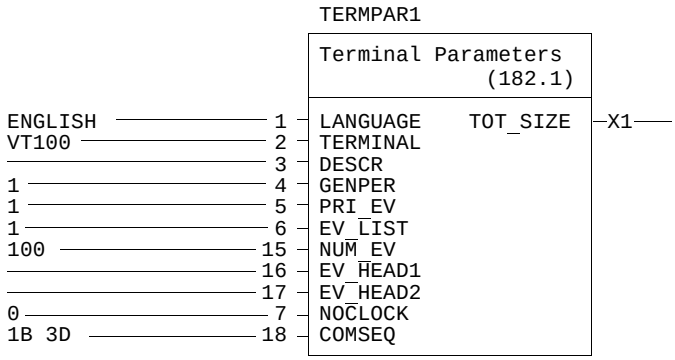
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
14(1)	STR1	system (MV320)	–		**STR**ing. Presentation format of Boolean data.	Strings are stored here to represent Boolean data for example ON, OFF, OPEN, CLOSED, SET, RESET etc. (Maximum 12 characters).
14(2)	STR2	system (MV320)		–	**STR**ing. Presentation format of Boolean data.	
:	:	:	:	:	:	
14(20)	STR20	system (MV320)	–	–	**STR**ing. Presentation format of Boolean data.	

Terminal Parameters TERMPAR

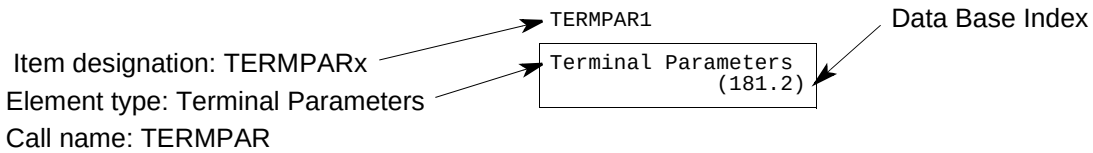
Summary

The Terminal Parameters data base element contains parameters for the MasterView 320 terminal.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description		Remarks
1	LANGUAGE	user	ENGLISH	I(r/w)	Value 1 2 3 4 5 6 7 8 9 10 11	Language of terminal English Swedish French German Dutch Spanish Italian Portuguese Norwegian Danish Finnish	–

Terminal Description (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
2	TERMINAL	user	VT100	I(r/w)	Type of **TERMINAL**. VT100 or VT220.	Not used.
3	DESCR	user	–	–	**DESCR**iption of terminal.	Max. 18 characters.
4	GENPER	user	1	B(r/w)	**GEN**erate **PER**mission.	Allows creation and modification of displays.
5	PRI_EV	user	1	B(r/w)	**PRI**nt **EV**ents.	Print received events automatically. MV 320 must be restarted before a new value can be used.
6	EV_LIST	user	1	–	Store received events in **EV**ent **LIST**.	–
15	NUM_EV	user	100	–	**NUM**ber of **EV**ents in event list.	Max. value 100.
16	EV_HEAD1	user	–	–	**EV**ent list **HEAD**er, part **1**.	Printed at top of event list. Max. 18 characters per header.
17	EV_HEAD2	user	–	–	**EV**ent list **HEAD**er, part **2**.	Printed at top of event list. Max. 18 characters per header.
7	NOCLOCK	user	0	B(r/w)	Setting **NOCLOCK** to 1 stops the update of the clock. The terminal is allowed to dim.	–
18	COMSEQ	user	1B 3D	–	Start-up **SEQ**uence to terminal. Recommended values; 1B 3D (ESC=): Alternate Keypad. 1B 3E (ESC>): Numeric Keypad.	–
X1	TOT_SIZE	system	–	–	Memory area needed when using event handling.	–

Function

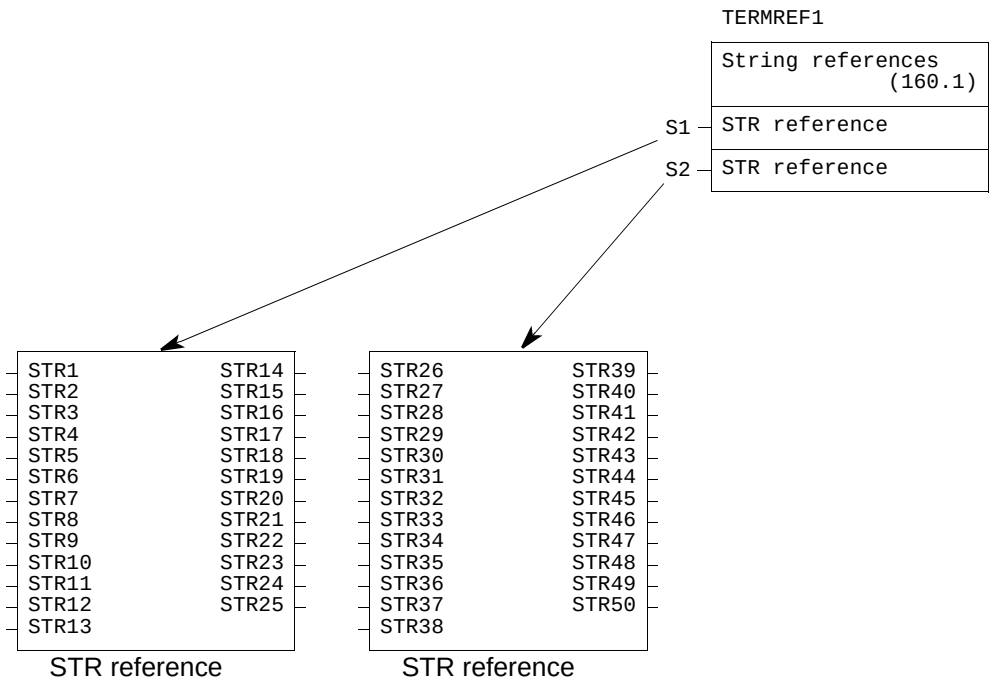
The parameters of the Terminal Parameters data base element are effective only after restart of the MasterView 320.

String references TERMREF

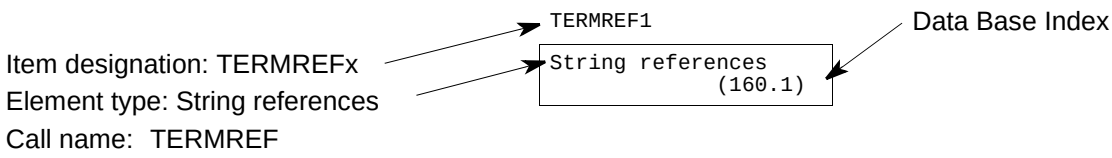
Summary

The String references data base element contains references to all static texts which are contained in one MasterView 320 display.

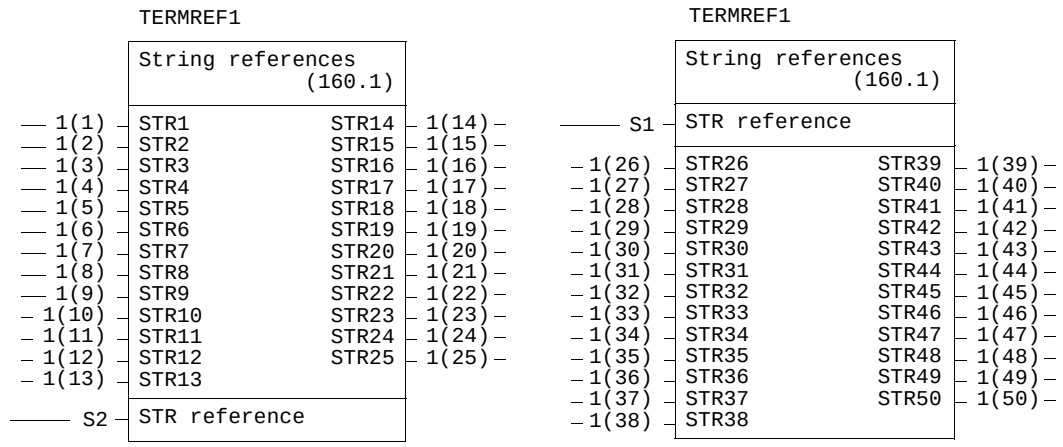
Overview



Head



STR reference



Terminal Description, STR reference

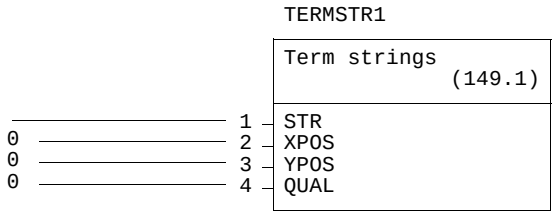
Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1(1)	STR1	system (MV320)	–	–	Reference to a specific **STR**ing references data base element (TERMSTRx).	The TERMSTRx element contains information about the static text in the display.
1(2)	STR2	system (MV320)	–	–	Reference to another **STR**ing references data base element (TERM**STRy**).	–
1(3)	STR3	system (MV320)		–	Reference to another **STR**ing references data base element (TERM**STRy**).	–
:	:	:	:	:	:	:
1(50)	STR50	system (MV320)	–	–	Reference to another **STR**ing references data base element (TERM**STRy**).	–

Term strings TERMSTR

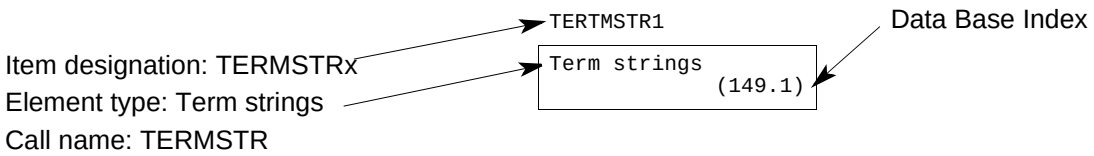
Summary

The Term strings data base element contains information about one static text.

Overview



Head



Terminal Description

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	STR	system (MV320)	–	–	**STR**ing. Static text.	A string of up to 20 characters, spaces included. The string forms one static text in the display.
2	XPOS	system (MV320)	0	I(r/w)	**X-POS**ition for the first character of the static text.	X-POS=column number. Available column numbers 1-80.
3	YPOS	system (MV320)	0	I(r/w)	**Y-POS**ition for the static text.	Y-POS=line number. Lines 4-19 can be used for static text.

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
4	QUAL	system (MV320)	0	I(r/w)	**QUAL**ities for output.	Output presentation type: 0 – no special presentation 1 – inverse video 2 – underscore 4 – blinking 8 – half intensity

Text data TEXT(20), TEXT(48), TEXT(72)

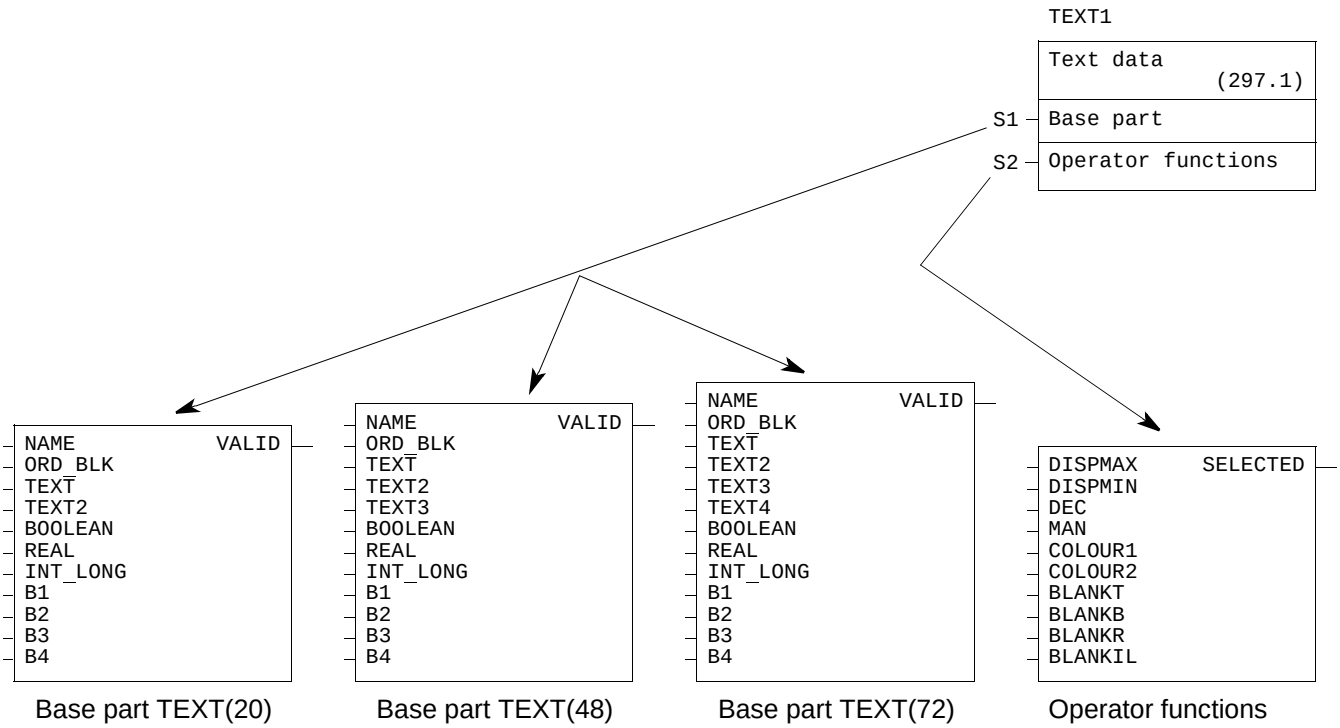
Summary

A Text data base element provides a block of data for Advant Station 500 Series Operator Station subscription and Advant Controller 400 Series to Advant Controller 400 Series communication. This block of data consists of the input to one text, one real, one integer and one boolean terminals. This data base element provides an Advant Station 500 Series Operator Station displaying possibility of cyclically updated text strings.

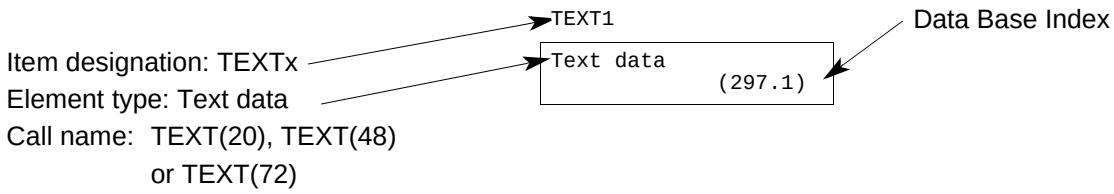
There are several Text data base elements for different lengths of text strings – TEXT(20), TEXT(48) and TEXT(72) – where the number specifies the text string length.

The block of data can be communicated between Advant Controller 400 Series nodes by using the data base element TEXT Data Set Descr.

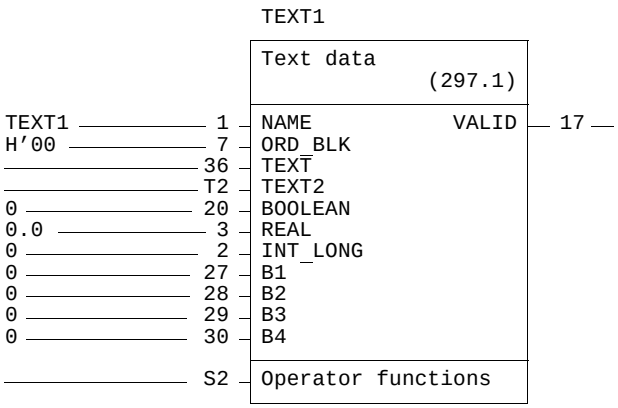
Overview



Head



Base part, TEXT(20)



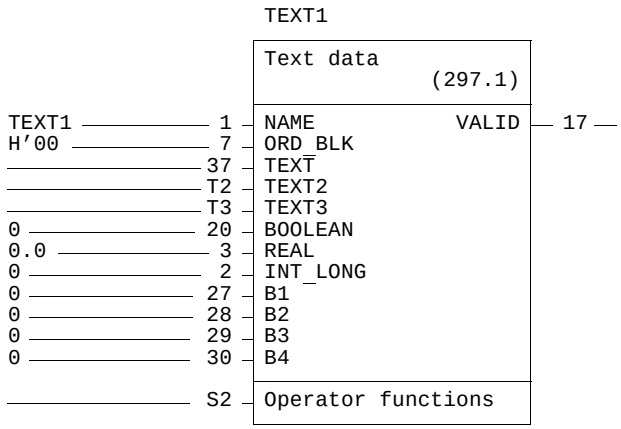
Terminal Description, Base part, TEXT(20)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks	
1	NAME	user	TEXTx	A20(r/w)	Each object must have a unique **NAME**, for example ABC23.	Max. 20 characters. Spaces are not allowed.	
7	ORD_BLK	user	H'00	I(r/w)	**BL**oc**K**ing of manual **ORD**ers changing the value of the TEXT, BOOLEAN, REAL and/or INT_LONG terminals. The ORD_BLK value consists of four flags - one for each terminal - with blocking effect if set. The default value contains no set flags. The table in the Remarks field shows how to compute the ORD_BLK value.	Flag	Bit value
						TEXT	1
						BOOLEAN	2
						REAL	4
						INT_LONG	8
						Not used	1
						Not used	2
						Not used	4
						Not used	8

Terminal Description, Base part, TEXT(20) (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
36	TEXT	user	–	A20(r/w)	A 20 character positions long text string. For Operator Station subscription and Advant Controller 400 Series to Advant Controller 400 Series communication. Constitutes an Operator Station picture element.	Exists only in TEXT(20) element.
T2	TEXT2	user	–	–	**TEXT** part number **2**. Max. 20 characters including the two enclosing quotes.	Only for presentation in Engineering Station.
20	BOOLEAN	user	0	B(r/w)	**BOOLEAN**. Other data same as for INT_LONG.	–
3	REAL	user	0.0	R(r/w)	**REAL**. Other data same as for INT_LONG.	–
2	INT_LONG	user	0	IL(r/w)	**INT**eger **LONG**. For Operator Station subscription and Advant Controller 400 Series to Advant Controller 400 Series communication. Constitutes an Operator Station display element.	–
27	B1	user	0	B(r/w)	**B**oolean data **1**. For Advant Controller 400 Series to Advant Controller 400 Series communication.	–
28	B2	user	0	B(r/w)	**B**oolean data **2**. Other data same as for B1.	–
29	B3	user	0	B(r/w)	**B**oolean data **3**. Other data same as for B1.	–
30	B4	user	0	B(r/w)	**B**oolean data **4**. Other data same as for B1.	–
17	VALID	system	0	B(r/w)	**VALID**. Is 0 when created and set to 1 by program entering a value.	Set by TEXT Set Communication of successful write operation.

Base part, TEXT(48)



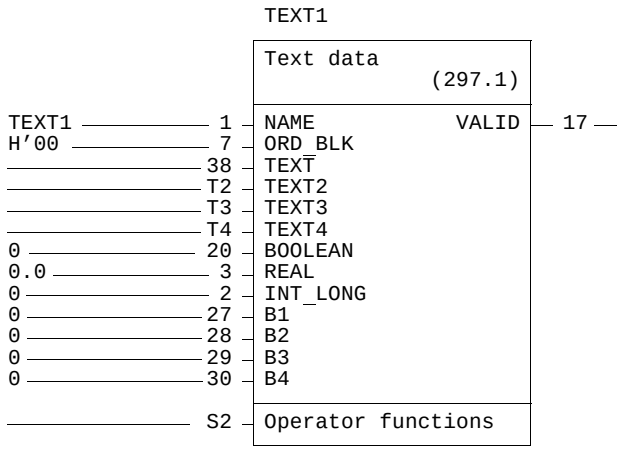
Terminal Description, Base part, TEXT(48)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks	
1	NAME	user	TEXTx	A20(r/w)	Each object must have a unique **NAME**, for example ABC23.	Max. 20 characters. Spaces are not allowed.	
7	ORD_BLK	user	H'00	I(r/w)	**BL**oc**K**ing of manual **ORD**ers changing the value of the TEXT, BOOLEAN, REAL and/or INT_LONG terminals. The ORD_BLK value consists of four flags - one for each terminal - with blocking effect if set. The default value contains no set flags. The table in the Remarks field shows how to compute the ORD_BLK value.	Flag	Bit value
						TEXT	1
						BOOLEAN	2
						REAL	4
						INT_LONG	8
						Not used	1
						Not used	2
						Not used	4
						Not used	8
37	TEXT	user	–	A48(r/w)	A 48 character positions long text string. For Operator Station subscription and Advant Controller 400 Series to Advant Controller 400 Series communication. Constitutes an Operator Station picture element.	Exists only in TEXT(48) element.	
T2	TEXT2	user	–	–	**TEXT** part number **2**. Max. 20 characters including the two enclosing quotes.	Only for presentation in Engineering Station.	

Terminal Description, Base part, TEXT(48) (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
T3	TEXT3	user	–	–	**TEXT** part number **3**. Other data same as for TEXT2.	–
20	BOOLEAN	user	0	B(r/w)	**BOOLEAN**. Other data same as for INT_LONG.	–
3	REAL	user	0.0	R(r/w)	**REAL**. Other data same as for INT_LONG.	–
2	INT_LONG	user	0	IL(r/w)	**INT**eger **LONG**. For Operator Station subscription and Advant Controller 400 Series to Advant Controller 400 Series communication. Constitutes an Operator Station display element.	–
27	B1	user	0	B(r/w)	**B**oolean data **1**. For Advant Controller 400 Series to Advant Controller 400 Series communication.	–
28	B2	user	0	B(r/w)	**B**oolean data **2**. Other data same as for B1.	–
29	B3	user	0	B(r/w)	**B**oolean data **3**. Other data same as for B1.	–
30	B4	user	0	B(r/w)	**B**oolean data **4**. Other data same as for B1.	–
17	VALID	system	0	B(r/w)	**VALID**. Is 0 when created and set to 1 by program entering a value.	Set by TEXT Set Communication of successful write operation.

Base part, TEXT(72)



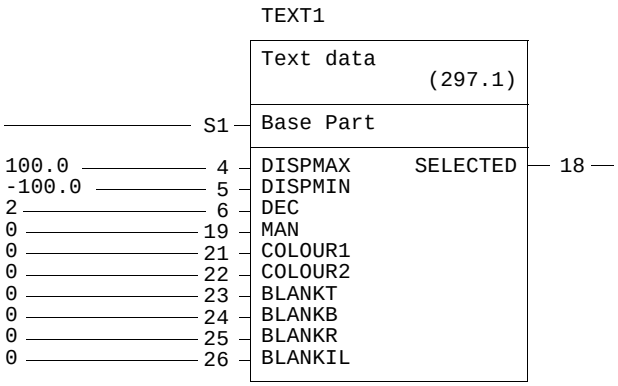
Terminal Description, Base part, TEXT(72)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks	
1	NAME	user	TEXTx	A20(r/w)	Each object must have a unique **NAME**, for example ABC23.	Max. 20 characters. Spaces are not allowed.	
7	ORD_BLK	user	H'00	I(r/w)	**BL**oc**K**ing of manual **ORD**ers changing the value of the TEXT, BOOLEAN, REAL and/or INT_LONG terminals. The ORD_BLK value consists of four flags - one for each terminal - with blocking effect if set. The default value contains no set flags. The table in the Remarks field shows how to compute the ORD_BLK value.	Flag	Bit value
						TEXT	1
						BOOLEAN	2
						REAL	4
						INT_LONG	8
						Not used	1
						Not used	2
						Not used	4
						Not used	8
38	TEXT	user	–	A72(r/w)	A 72 character positions long text string. For Operator Station subscription and Advant Controller 400 Series to Advant Controller 400 Series communication. Constitutes an Operator Station picture element.	Exists only in TEXT(72) element.	

Terminal Description, Base part, TEXT(72) (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
T2	TEXT2	user	–	–	**TEXT** part number **2**. Max. 20 characters including the two enclosing quotes.	Only for presentation in Engineering Station.
T3	TEXT3	user	–	–	**TEXT** part number **3**. Other data same as for TEXT2.	–
T4	TEXT4	user	–	–	**TEXT** part number **4**. Other data same as for TEXT2.	–
20	BOOLEAN	user	0	B(r/w)	**BOOLEAN**. Other data same as for INT_LONG.	–
3	REAL	user	0.0	R(r/w)	**REAL**. Other data same as for INT_LONG.	–
2	INT_LONG	user	0	IL(r/w)	**INT**eger **LONG**. For Operator Station subscription and Advant Controller 400 Series to Advant Controller 400 Series communication. Constitutes an Operator Station display element.	–
27	B1	user	0	B(r/w)	**B**oolean data **1**. For Advant Controller 400 to Advant Controller 400 communication.	–
28	B2	user	0	B(r/w)	**B**oolean data **2**. Other data same as for B1.	–
29	B3	user	0	B(r/w)	**B**oolean data **3**. Other data same as for B1.	–
30	B4	user	0	B(r/w)	**B**oolean data **4**. Other data same as for B1.	–
17	VALID	system	0	B(r/w)	**VALID**. Is 0 when created and set to 1 by program entering a value.	Set by TEXT Set Communication of successful write operation.

Operator functions



Terminal Description, Operator functions

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
4	DISPMAX	user	100.0	R(r/w)	**MAX**imum value to be entered for REAL in Operator Station dialog.	–
5	DISPMIN	user	–100.0	R(r/w)	**MIN**imum value to be entered for REAL in Operator Station dialog.	–
6	DEC	user	2	B(r/w)	The number of **DEC**imals to be presented by Operator Station.	0 - 6 decimals.
19	MAN	dialog	0	B(r/w)	Flag indicating that **MAN**ual control by MV operator has been selected.	0=Controlled and updated by PC program.
21	COLOUR1	user	0	B(r/w)	Define **COLOUR** presentation in Operator Station.	Colour2=1 produces flashing red color. Colour1= and Colour2=0 produces red light. Colour1=0 and Colour2=0 produces green light.
22	COLOUR2	user	0	B(r/w)	Define **COLOUR** presentation in Operator Station.	Colour2=1 produces flashing red color. Colour1= and Colour2=0 produces red light. Colour1=0 and Colour2=0 produces green light.
23	BLANKT	user	0	B(r/w)	**BLANK**ing of **T**ext value.	–
24	BLANKB	user	0	B(r/w)	**BLANK**ing of **B**oolean value.	–
25	BLANKR	user	0	B(r/w)	**BLANK**ing of **R**eal value.	–

Terminal Description, Operator functions (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
26	BLANKIL	user	0	B(r/w)	**BLANK**ing of **I**NT_**L**ONG value.	–
18	SELECTED	system	–	B(r/w)	Flag indicating whether the element has been **SELECTED** by the Operator Station operator for dialog.	Cannot be operated by user.

Function

The Operator Station provides the possibility of displaying a selected set of the data for subscription, for example the text and real terminal inputs.

Operator Station color control is provided by the terminals COLOUR1 and COLOUR2.

Blanking of displayed values can be provided by the terminals BLANKT, BLANKB, BLANKR and BLANKIL.

Manual entering of the data for subscription is, if permission is provided by the terminal ORD_BLK, enabled by changing operation mode from AUTO to MAN at the Operator Station station.

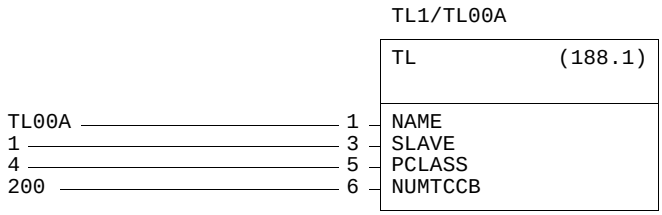
TL TL

Summary

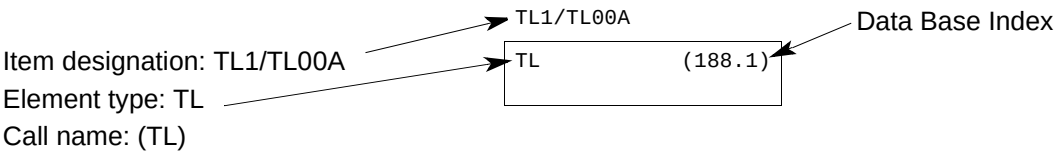
The TL data base element defines certain terminals of the Transport Layer.

The values in the TL element may only be read.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	system	–	A6(r)	**NAME**. TL00A to TL00I.	–
3	SLAVE	system	–	I(r)	This terminal indicates on which **SLAVE** processor the transport protocol is resident.	–
5	PCLASS	system	4	I(r)	Transport **P**rotocol **CLASS**.	Possible values 1 - 4.
6	NUMTCCB	system	200	I(r)	**NUM**ber of **T**ransport **C**onnection **C**ontrol **B**locks.	Possible values 1 - 255.

Predefined Board Identities

Each DSCS 140 communication board is connected to a data base element via its strap address.

Data Base index LF.LR	Item Designation	Name	SLAVE
188.1	TL1	TL00A	1
188.2	TL2	TL00B	2
188.3	TL3	TL00C	3
188.4	TL4	TL00D	4
188.5	TL5	TL00E	5
188.6	TL6	TL00F	6
188.7	TL7	TL00G	7
188.8	TL8	TL00H	8
188.9	TL9	TL00I	9

The Transport Layer

The Transport Layer performs segmentation and reassembly of user data, flow control in combination with pipelining and error detection and recovery.

It is based on the ISO transport protocol class 2 and 4.

System Init

You can start communication in four different ways:

1. Insert a correctly strapped CS513 module in Advant Controller 410, SC 510 or SC 520.
2. Leave the configuration mode.
3. Activate the INIT switch on the host processor front panel.
4. Give the ECONFIG or RECONFIG command.

If you leave the configuration mode, enter the Advant Station 100ES Series command DICONFIG or activate the INIT switch on the host processor, the Advant OCS with Master software, including all its communication, is restarted.

NOTE

The first CS513 you insert baptizes the station with a node number. If an erroneous node number is introduced by mistake, cold start the station via the switch on the host processor or give the RECONFIG command before a new node number is accepted.

When communication restarts, a cold start-up is performed, that is connections are reestablished. Communication restarts within approximately 20 seconds.

Verifying MasterBus 300

LED indications on CS513

Name	Defining	LED color
F	Fault	Red
R	Run	Green
TX/LAN	Transmit to LAN	Yellow
RX	Receive from LAN	Yellow

LED indications on SC 5X0

Name	Defining	LED color
F	Fault	Red
RUN	Run	Green

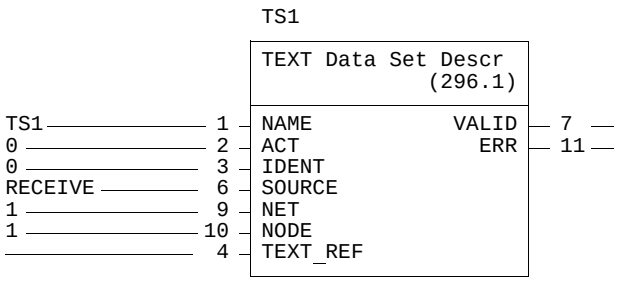
TEXT Data Set Descr TS

Summary

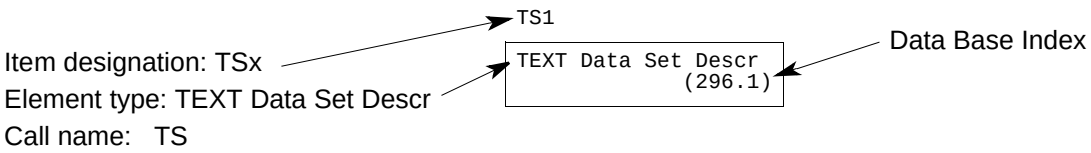
The TEXT Data Set Descr data base element defines communication, between Advant Controller 400 Series nodes, of Text data over MasterNet. The element contains a reference to one data base element Text data. In this data base element Text data the block of data to be transmitted or received, is stored.

The block of data can be communicated between Advant Controller 400 Series nodes by using the data base element TEXT Data Set Descr.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	TSx	A20(r/w)	Each TEXT Data Set Descr must have a unique **NAME**.	Maximum 20 characters.
2	ACT	user	0	B(r/w)	1=the element is **ACT**ivated. 0=the element is spare.	For ACT=0 data cannot be accessed.

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
3	IDENT	user	0	–	**IDENT**ifies the Text Set in the node. Allowed values 1 - 255.	For Text Set Communication the terminals SOURCE and IDENT must have a unique combination. For ACT=1. IDENT=0 is not allowed.
6	SOURCE	user	RECEIVE	–	**SOURCE**. Defines the direction of the communication 0=RECEIVE, 1=SEND.	–
9	NET	user	1	–	**NET** number of opposite node. 1 - 127.	If SOURCE=SEND: destination net if SOURCE=RECEIVE: transmitting net.
10	NODE	user	1	–	**NODE** number of opposite node.	–
4	TEXT_REF	user	0	–	**TEXT REF**erence. Name of connected text element.	–
7	VALID	system	–	B(r/w)	**VALID**. 1=text has been updated 0=reset by user 1=text has been sent 0=text has not been sent	Rec. Text Set. Send. Text Set.
11	ERR	system	–	B	**ERR**or. 1=no reference 0=no connection	Rec. Text Set. Send. Text Set.

Creating and Deleting

When creating a TEXT Data Set Descr data base element, it is possible to refer to an existing data base element Text data. A TEXT Data Set Descr element can refer to only one data base element Text data.

A created TEXT Data Set Descr element can not be deleted with the DDB command.

Function

Transmission control

The terminal ACT controls whether the Text Set will be transmitted or not. A TEXT Data Set Descr element is inactivated by setting ACT=0. VALID is set to one for the TEXT Data Set Descr element and its “Text data” data base element when proper data is received. IDENT is the unique identification used by the system. IDENT must be equal for corresponding element in sending and receiving node, and must be unique in both nodes.

See the PC element SENDREQ for information about event controlled execution of the Text Set.

TEXT Data Set Descr Communication

Transmission

When you activate a TEXT Data Set Descr data base element to send its data to a Advant Controller 400 Series node in MasterNet, you must make sure that:

ACT	=	1
SOURCE	=	S
IDENT	=	a positive number 1 - 255.
NET	=	Network number of receiving Text Set.
NODE	=	Node number of receiving Text Set.
TEXT_REF	=	The data base elements Text data for sending and receiving must have the same call name – which means must have the same length of the Text strings.

IDENT, NET, SOURCE and NODE together form a unique identity. New TEXT Data Set Descr elements may be added after system init.

A corresponding Text Set with the same IDENT and with the NET and NODE numbers of the transmitting Text Set must exist in the receiving node, and it must be set up for reception.

TEXT Data Set Descr Communication

Reception

When you activate a TEXT Data Set Descr data base element to receive data via MasterNet, you must make sure that:

ACT	=	1
SOURCE	=	R
IDENT	=	a positive number 1 - 255.
NET	=	Network number of transmitting Text Set
NODE	=	Node number of transmitting Text Set
TEXT_REF	=	The data base elements Text data for sending and receiving must have the same call name.

IDENT, NET, SOURCE and NODE together form a unique identity. New TEXT Data Set Descr elements may be added after system init.

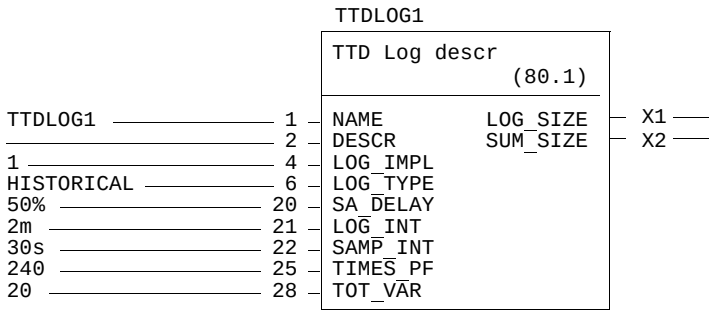
A corresponding Text Set with the same IDENT and with the NET and NODE numbers of the receiving Text Set must exist in the transmitting node, and it must be set up for transmission.

TTD Log descr TTDLOG

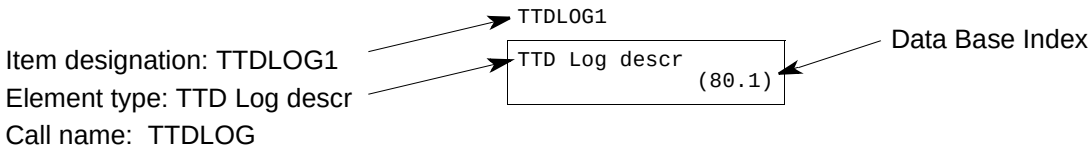
Summary

The TTD Log descr data base element is used to determine the size and type of a log. In addition the element determines the time intervals to be used for sampling and logging.

Overview



Head



Terminal Description

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
1	NAME	user	TTDLOG x	–	Each TTD Log descr must have a unique **NAME**.	Max. 20 characters. Spaces are not allowed. NOTE: The default NAME must be changed to one that is unique in all nodes if the system contains more than one MB 200 or MB 300
2	DESCR	user	–	–	**DESCR**iption of the log.	Max. 20 characters. Any information may be entered.

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
4	LOG_IMPL	user	0	–	**LOG IMPL**emented 0=Log is spare 1=Log implemented (logging active)	Modification is carried out at next system init.
6	LOG_TYPE	user	HISTO RICAL	–	**TYPE** of **LOG**. USER=User type log HISTORICAL=Historical log	A log of User type is never active and must be fed with data.
20	SA_DELAY	user	50%	–	**SA**mpling **DELAY** is the maximum accepted delay for each sample.	Given as 0 - 100% of SAMP_INT.
21	LOG_INT	user	2m	–	**LOG INT**erval of the log.	Refer to the table for Available intervals.
22	SAMP_INT	user	30s	–	**SAMP**le **INT**erval of the log.	Refer to the table for Available intervals.
25	TIMES_PF	user	240	–	Total number of **TIMES** on the **P**rimary **F**ile. The number is defined for each variable.	Accepted values are 1 - 32767
28	TOT_VAR	user	20	–	**TOT**al number of **VAR**iables in the log.	Accepted values are 1..127.
X1	LOG_SIZE	system	–	–	**LOG SIZE** required expressed in Kilobytes of memory.	–
X2	SUM_SIZE	system	–	–	**SUM** of all log **SIZE**s in this node.	–

Available intervals

Seconds	Minutes	Hours	Weeks
1S	1M	1H	1W
2S	2M	2H	
3S	3M	3H	
4S	4M	4H	
5S	5M	5H	
6S	6M	6H	
10S	10M	12H	
12S	12M	24H	
15S	15M		
20S	20M		
30S	30M		

NOTES

The log interval is the time interval between two consecutively stored variable values in the log.

The sample interval is the time interval between two consecutively collected variable values.

The log interval must be an integer factor in the sample interval.

The sample interval must be equal to the log interval if the log is of User type.

If SAMP_INT is set to 1S then SA_DELAY must be set to 100%.

Function

The TTD Log descr data base element is used to define the size and function of the log.

The size of the log is determined by:

- Number of variables
- Amount of time available given in number of logged values.

The function of the log is determined by:

- Log interval
- Sampling interval
- Log type (historic data or user data)
- Max. accepted delay.

TTD Var descr TTDVAR

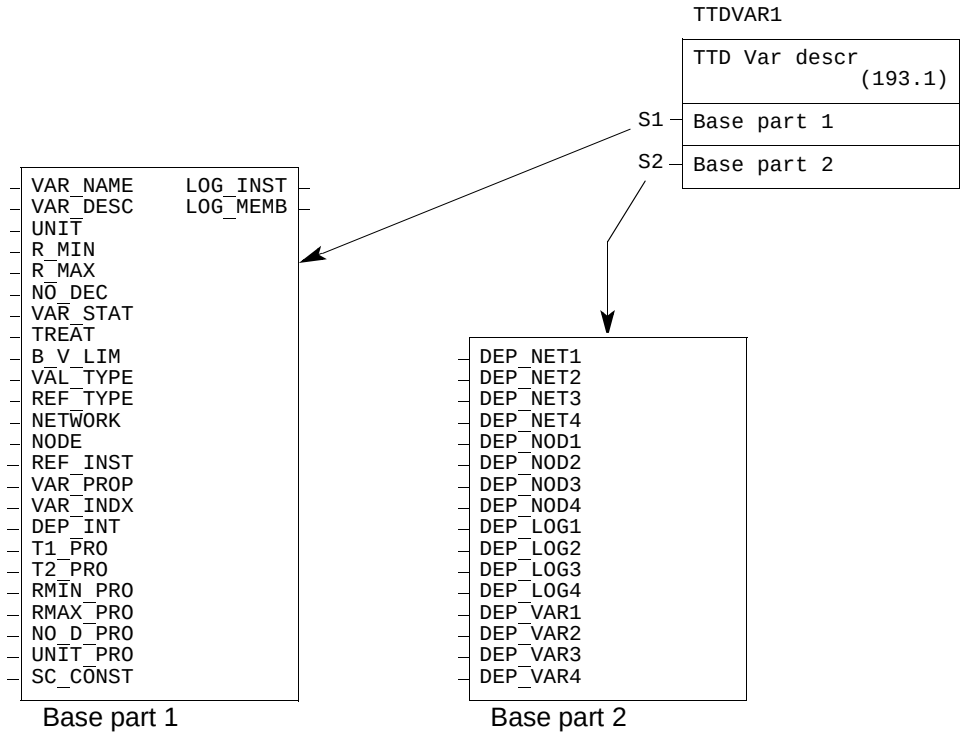
Summary

The TTD Var descr data base element enables the user to use a ”movable” data base (input) for TTD in Advant Controller 400 Series with source code handling supported by Advant Station 500 Series Engineering Station and Advant Station 500 Series Operator Station with option On-line Builder.

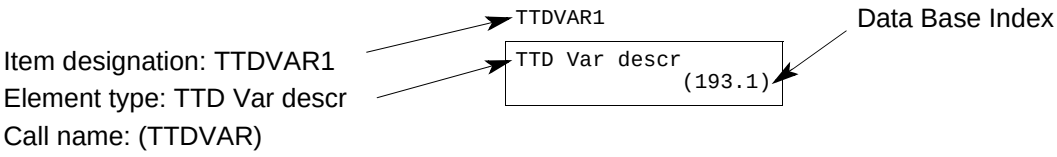
The user is not otherwise required to work with this element.

The terminals in the TTD Var descr element cannot be modified by the MDB command.

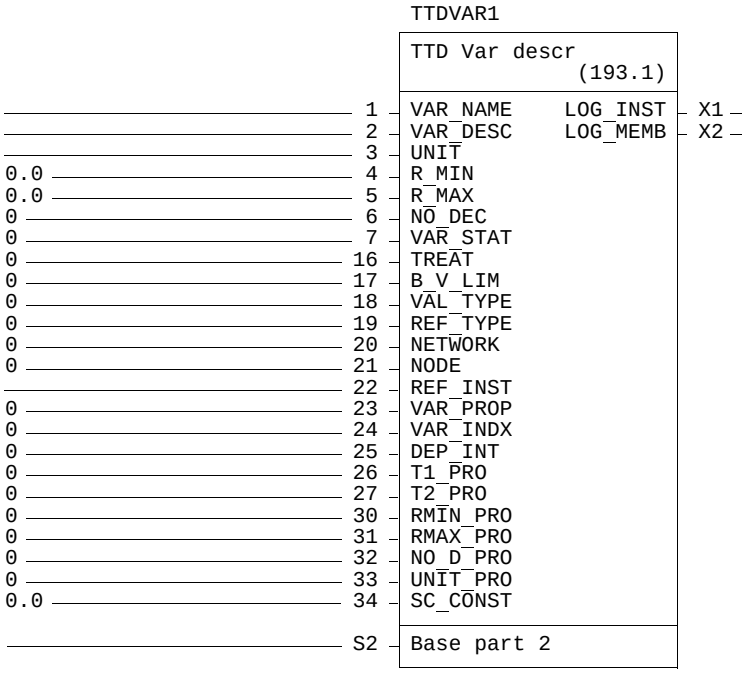
Overview



Head



Base part 1



Terminal Description, Base part 1

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	VAR_NAME	system	–	–	**VAR**iable **NAME** of logged object.	–
2	VAR_DESC	system	–	–	**VAR**iable **DESC**ription of the variable.	–
3	UNIT	system	–	–	**UNIT** of log variable values.	–
4	R_MIN	system	–	–	**MIN**imum value of the log variable to be presented.	–
5	R_MAX	system	–	–	**MAX**imum value of the log variable to be presented.	–
6	NO_DEC	system	–	–	**N**umber of **DEC**imals to be used in the presentation.	–

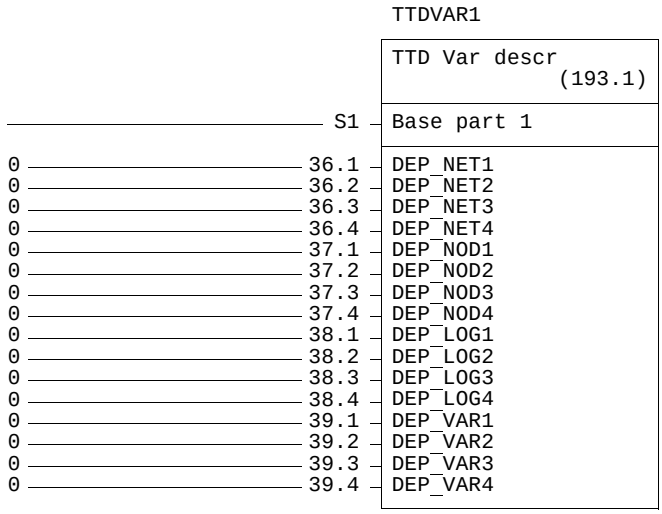
Terminal Description, Base part 1 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
7	VAR_STAT	system	–	–	Common **VAR**iable **STAT**us flag for: – implemented variable – initiated variable – active log variable – primary log variable – first test property – second test property – scaling – spare	8 internal boolean flags.
16	TREAT	system	–	–	**TREAT**ment type, that is log function.	Possible values are: mom, mean, max or min.
17	B_V_LIM	system	–	–	**B**ad **V**alue **LIM**it. The minimum share (%) of approved samples necessary to approve a logged value.	–
18	VAL_TYPE	system	–	–	**VAL**ue **TYPE** of the internal representation of values.	Possible values are: R, IB, I(W), IL or B.
19	REF_TYPE	system	–	–	**TYPE** of **REF**erenced log object.	–
20	NETWORK	system	–	–	Referenced **NETWORK**.	–
21	NODE	system	–	–	Referenced **NODE**.	–
22	REF_INST	system	–	–	**REF**erenced **INST**ance to log or object (data base index).	–
23	VAR_PROP	system	–	–	Referenced **VAR**iable **PROP**erty number.	–
24	VAR_INDX	system	–	–	**IND**e**X** of referenced **VAR**iable.	–
25	DEP_INT	system	–	–	**DEP**endent log **INT**erval index.	–
26	T1_PRO	system	–	–	First **T**est **PRO**perty number.	–
27	T2_PRO	system	–	–	Second **T**est **PRO**perty number.	–
30	RMIN_PRO	system	–	–	**PRO**perty number of **R MIN**.	–
31	RMAX_PRO	system	–	–	**PRO**perty number of **R MAX**.	–
32	NO_D_PRO	system	–	–	**PRO**perty number of **NO D**ec.	–
33	UNIT_PRO	system	–	–	**PRO**perty number of **UNIT**.	–
34	SC_CONST	system	–	–	**SC**aling **CONST**ant.	–

Terminal Description, Base part 1 (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
X1	LOG_INST	system	–	–	**LOG INST**ance number.	Engineering Station-reference to instance in TTD Log. Other Possible values are: NO INST, NO MEMB, MORE MEMB and MORE INST.
X2	LOG_MEMB	system	–	–	**LOG** variable number.	Engineering Station-reference to instance in TTD Log. Other Possible values are: NO INST, NO MEMB, MORE MEMB and MORE INST.

Base part 2



Terminal Description, Base part 2

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
36.1	DEP_NET1	system	0	–	Referenced **DEP**endent **NET**work number **1**.	–
36.2	DEP_NET2	system	0	–	Referenced **DEP**endent **NET**work number **2**.	–

Terminal Description, Base part 2 (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
36.3	DEP_NET3	system	0	–	Referenced **DEP**endent **NET**work number **3**.	–
36.4	DEP_NET4	system	0	–	Referenced **DEP**endent **NET**work number **4**.	–
37.1	DEP_NOD1	system	0	–	Referenced **DEP**endent **NOD**e number **1**.	–
37.2	DEP_NOD2	system	0	–	Referenced **DEP**endent **NOD**e number **2**.	–
37.3	DEP_NOD3	system	0	–	Referenced **DEP**endent **NOD**e number **3**.	–
37.4	DEP_NOD4	system	0	–	Referenced **DEP**endent **NOD**e number **4**.	–
38.1	DEP_LOG1	system	0	–	Referenced **DEP**endent **LOG** number **1**.	–
38.2	DEP_LOG2	system	0	–	Referenced **DEP**endent **LOG** number **2**.	–
38.3	DEP_LOG3	system	0	–	Referenced **DEP**endent **LOG** number **3**.	–
38.4	DEP_LOG4	system	0	–	Referenced **DEP**endent **LOG** number **4**.	–
39.1	DEP_VAR1	system	0	–	Referenced **DEP**endent **VAR**iable index **1**.	–
39.2	DEP_VAR2	system	0	–	Referenced **DEP**endent **VAR**iable index **2**.	–
39.3	DEP_VAR3	system	0	–	Referenced **DEP**endent **VAR**iable index **3**.	–
39.4	DEP_VAR4	system	0	–	Referenced **DEP**endent **VAR**iable index **4**.	–

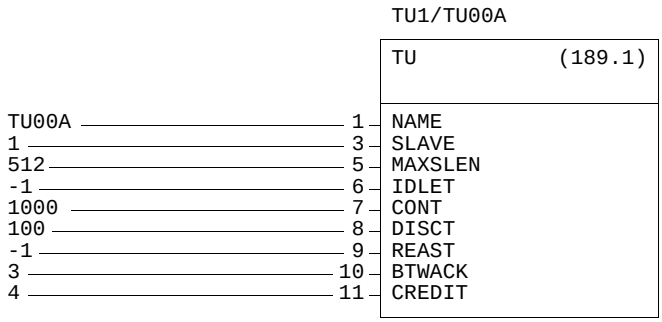
TU TU

Summary

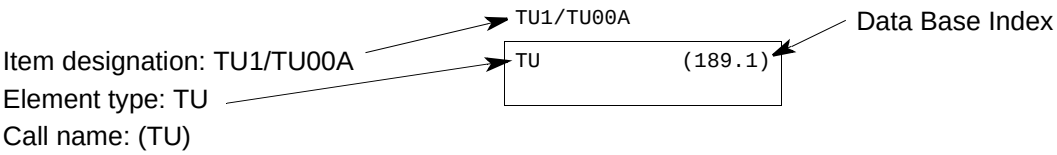
The TU data base element assigns initial values to the transport connections.

The values in the TU element may only be read.

Overview



Head



Terminal Description

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	system	–	A6(r)	**NAME** of element. TU00A to TU00I.	–
3	SLAVE	system	–	I(r)	The **SLAVE** terminal indicates on which slave processor the transceiver is resident.	–
5	MAXSLEN	system	512	I(r)	**MAX**imum **S**ignal **LEN**gth expressed in byte for a transport connection with low or normal priority.	–

Terminal Description (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks
6	IDLET	system	–1	I(r)	Transport **IDLE T**ime. MB 300: This terminal specifies the maximum time that a transport connection with low or normal priority is allowed to be unused while in the data transfer state. MB 300E: This is the terminal in which you can specify how often the cyclic acknowledgment is sent.	MB 300: If this timer expires, the transport connection is disconnected and data may be lost. Time is expressed in 10 ms units. –1 means infinite. MB 300E: Can be set to 600 - 1200 which corresponds to 6-12 seconds. –1 = the default value is 6 seconds.
7	CONT	system	1000	I(r)	The Transport **CON**nection **T**ime terminal specifies the maximum time allowed for the successful establishment of a transport connection.	Time is expressed in units of 10 ms. Possible values are –1 - 32767.
8	DISCT	system	100	I(r)	The **DISC**onnection **T**ime terminal specifies the maximum time that a transport connection is allowed to be in the disconnecting state.	Time is expressed in units of 10 ms. Possible values are –1 - 32767.
9	REAST	system	–1	I(r)	The **REAS**sembly **T**ime terminal specifies the maximum time that may elapse before a transport Service Data Unit (TSDU) is successfully reassembled on a transport connection with low or normal priority.	If this time expires the transport connection is disconnected and data may be lost. Time is expressed in units of 10 ms. –1=infinite. Possible values are –1 - 32767.
10	BTWACK	system	3	I(r)	The **B**e**TW**een **ACK**nowledgment terminal specifies for transport connections with low or normal priority when it is time for the receiving transport entity to transmit an acknowledgment.	The transmitting unit must receive an acknowledgment to be permitted to continue to transmit. BTWACK is expressed in number of received Transport Protocol Data Units (TPDU's). Possible values are 1 - 15.
11	CREDIT	system	4	I(r)	The **CREDIT** terminal specifies the initial maximum number of transport Protocol Data Unit (TPDU) that the receiving transport entity allows the sending transport entity to transmit on a transport connection with low or normal priority.	–1=CREDIT is calculated by the system in order to allow pipelining. Transport connection send and receive queue size are equal to max(credit, max tsdu). Possible values are –1 - 15.

Predefined Board Identities

Each DSCS 140 communication board is connected to a data base element via its strap address.

Data Base index LF.LR	Item Designation	Name	SLAVE
189.1	TU1	TU00A	1
189.2	TU2	TU00B	2
189.3	TU3	TU00C	3
189.4	TU4	TU00D	4
189.5	TU5	TU00E	5
189.6	TU6	TU00F	6
189.7	TU7	TU00G	7
188.8	TU8	TU00H	8
189.9	TU9	TU00I	9

System Init

You can start communication in four different ways:

1. Insert a correctly strapped CS513 module in Advant Controller 410, SC 510 or SC 520.
2. Leave the configuration mode.
3. Activate the INIT switch on the host processor front panel.
4. Give the ECONFIG or RECONFIG command.

If you leave the configuration mode, enter the Advant Station 100ES Series command DICONFIG or activate the INIT switch on the host processor, the Advant OCS with Master software, including all its communication, is restarted.

NOTE

The first CS513 you insert baptizes the station with a node number. If an erroneous node number is introduced by mistake, cold start the station via the switch on the host processor or give the RECONFIG command before a new node number is accepted

When communication restarts, a cold start-up is performed, that is connections are reestablished. Communication restarts within approximately 20 seconds.

Verifying MasterBus 300

LED indications on CS513

Name	Defining	LED color
F	Fault	Red
R	Run	Green
TX/LAN	Transmit to LAN	Yellow
RX	Receive from LAN	Yellow

LED indications on SC 5X0

Name	Defining	LED color
F	Fault	Red
RUN	Run	Green

Valve Control VALVECON

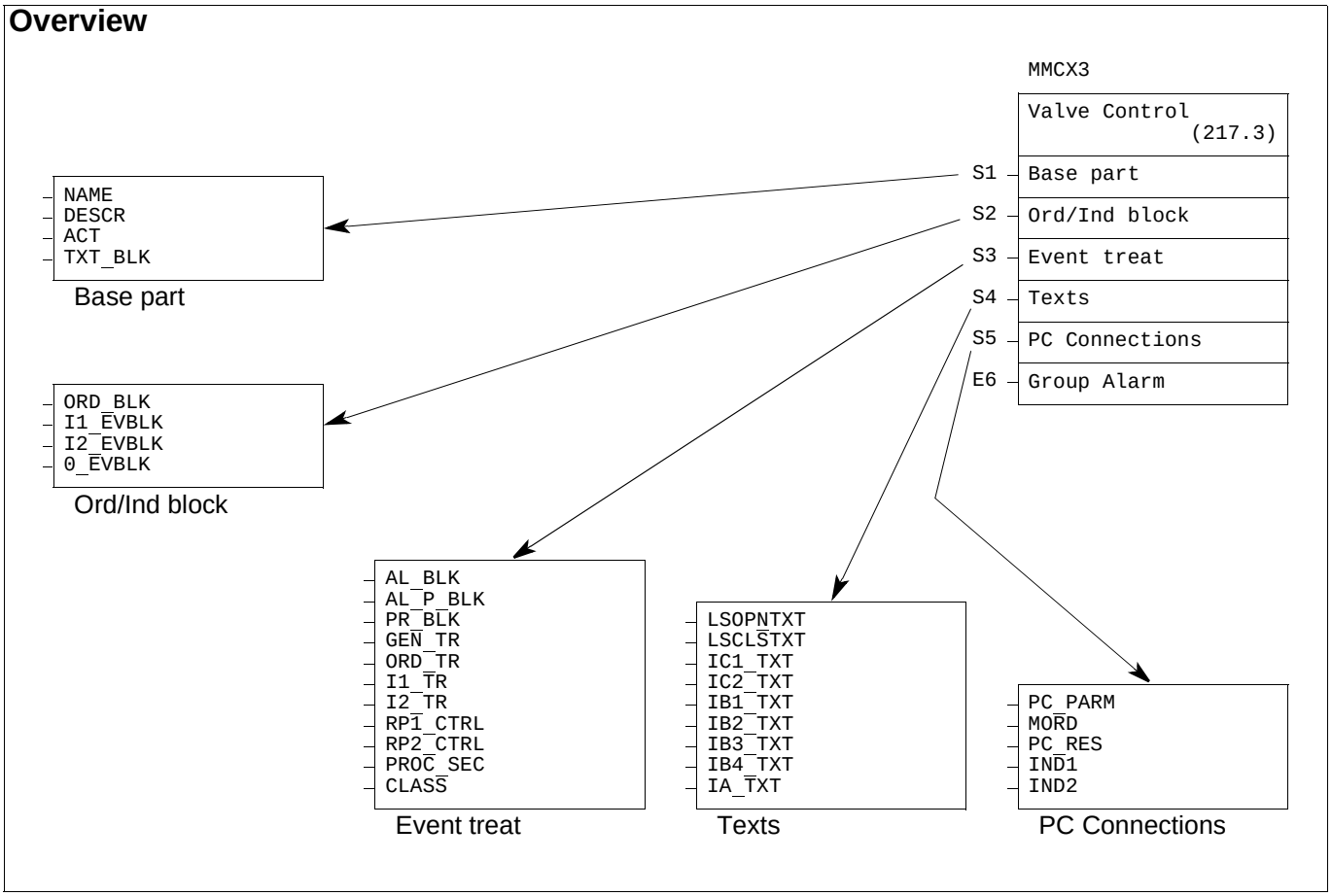
Summary

The Valve Control data base element is used to build Advant Station 500 Series Operator Station functions for the VALVECON function unit. Some static information is given.

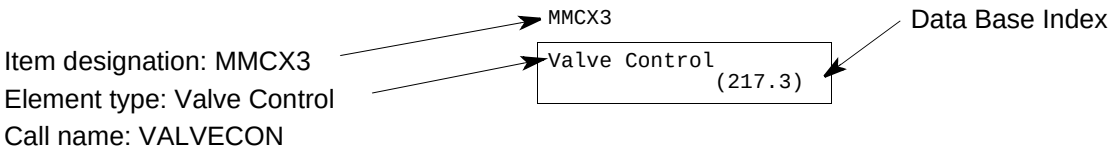
Parameters that can be changed from the dialog can be given start values.

For information about the extension parts of Group Alarm see data base element Group Member.

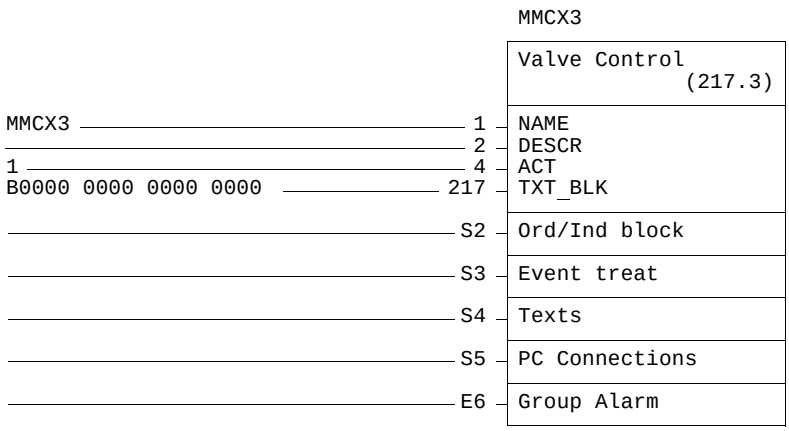
Overview



Head



Base part



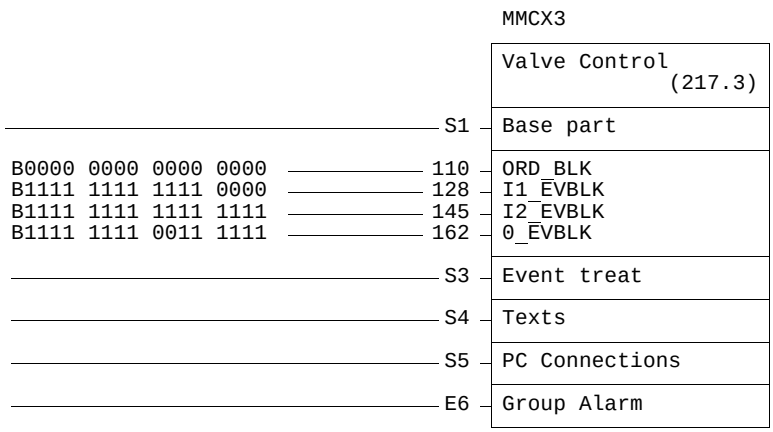
Terminal Description, Base part

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
1	NAME	user	MMCXx	–	Each object must be given a unique **NAME**, for example ABC 123.	Max. 20 characters. Spaces are not allowed.
2	DESCR	user	–	–	**DESCR**iption of the object that is shown in Operator Station.	Max. 20 characters. Any information regarding the object may be entered.
4	ACT	user	1	B(r/w)	1=Operator communication is **ACT**ive.	0=Communication is blocked and events are not updated.

Terminal Description, Base part (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
217	TXT_BLK	user	H'0000	I(r/w)	**TeXT BLocK** is used to remove unused fixed error texts from the object picture. All available texts are represented by a flag in TXT_BLK. A set flag indicates a blocked text. The default value have no set flags. The TXT_BLK table shows how to compute the TXT_BLK value.	Text	Bit value	Def. Hex. value
						Fault 1	1	0
						Fault 2	2	
						Not used	4	
						Not used	8	
						Not used	1	0
						Not used	2	
						Not used	4	
						Not used	8	
						Not used	1	0
						Not used	2	
						Not used	4	
						Not used	8	

Ord/Ind block



Terminal Description, Ord/Ind block

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
110	ORD_BLK	user	H'0000	I(r/w)	**BL**oc**K**ing of manual **ORD**ers. Always available orders are represented by a flag in ORD_BLK. A set flag indicates a blocked order. The default value contains no set flags. The ORD_BLK table shows how to compute the ORD_BLK value.	Text	Bit value	Def. Hex. value
						Local	1	0
						Test	2	
						Standby	4	
						Central	8	
						Auto	1	0
						Man	2	
						Blocking of interlocks IB1 and IB3	4	
						Deblocking	8	
						Open	1	0
						Close	2	
						Sequence	4	
						Not used	8	
						Not used	1	0
						Not used	2	
						Not used	4	
						Not used	8	

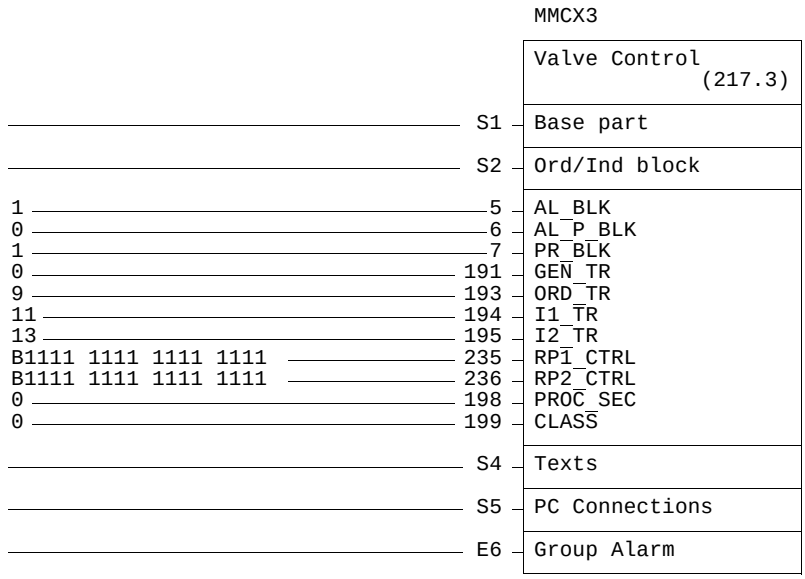
Terminal Description, Ord/Ind block (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
128	I1_EVBLK	user	H'FFF0	I(r/w)	**BL**oc**K**ing of **I**ndication **EV**ents **1**. All available events are represented by a flag in I1_EVBLK. A set flag indicates a blocked event. The default value is set to block all events at indication that are not normally error indications. The I1_EVBLK table shows how to compute the I1_EVBLK value.	Text	Bit value	Def. Hex. value
						External error 1	1	0
						External error 2	2	
						Position error open	4	
						Position error close	8	
						Always 1	1	F
						Always 1	2	
						Always 1	4	
						Limit switch open	8	
						Always 1	1	F
						Always 1	2	
						Always 1	4	
						Limit switch close	8	
						Always 1	1	F
						Always 1	2	
						Always 1	4	
						Intermediate position	8	

Terminal Description, Ord/Ind block (Continued)

Termi-nal No	Terminal Name	Value entered by	Default value	PC con-nection data type	Description	Remarks		
145	I2_EVBLK	user	H'FFFF	I(r/w)	**L**oc**K**ing of **I**ndication **EV**ents **2**. All available events at indication are represented by flag in I2_EVBLK. A set flag indicates a blocked event. The default value is set to block all events. The I2_EVBLK table shows how to compute the I2_EVBLK value.	Text	Bit value	Def. Hex. value
						Always 1	1	F
						Local	2	
						Test	4	
						Standby	8	
						Sequence	1	F
						Auto/Manual	2	
						Always 1	4	
						Always 1	8	
						Active interlock IC1	1	F
						Active interlock IC2	2	
						Active interlock IB1	4	
						Active interlock IB2	8	
						Active interlock IB3	1	F
						Active interlock IB4	2	
						Active interlock IA	4	
						Always 1	8	
162	O_EVBLK	user	H'FF3F	–	**BL**oc**K**ing of manual **O**rders **EV**ents. All available events are represented by a flag in O_EVBLK. A set flag indicates a blocked event. The default value is set to block all events except interlock blocking. The O_EVBLK value is computed in the same way as the ORD_BLK value and uses the same table.	The function is not implemented in Operator Station.		

Event treat



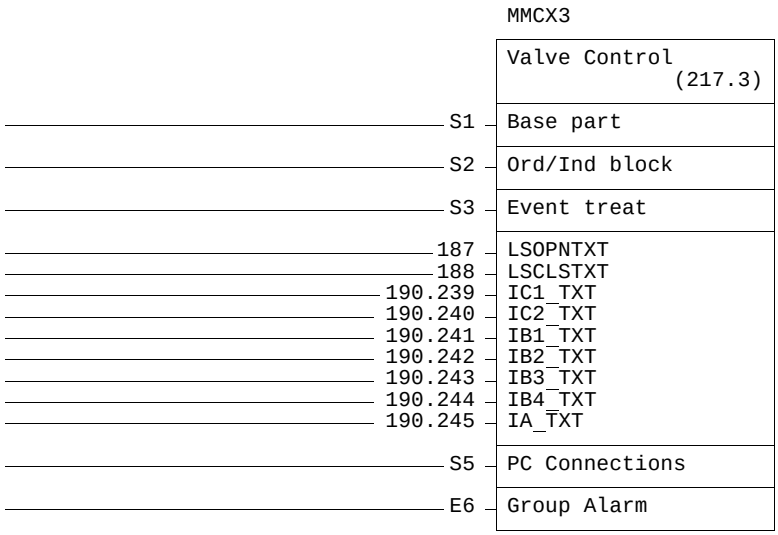
Terminal Description, Event treat

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
5	AL_BLK	dialog	1	–	Flag for **BL**oc**K**ing of **AL**arm indication and event handling in Operator Station.	–
6	AL_P_BLK	system	0	B(r/w)	**AL**arm **P**eriod **BL**oc**K** flag for temporary blocking of alarm indication and event handling in Operator Station by PC program.	–
7	PR_BLK	dialog	1	–	Flag for **BL**oc**K**ing of **PR**intout in Operator Station.	–
191	GEN_TR	user	0	–	The **GEN**eral **TR**eatment terminal assigns item numbers for event handling of ALARM BLocK orders and PRINT BLocK orders.	Function not implemented in Operator Station.
193	ORD_TR	user	9	–	The manual **ORD**er **TR**eatment terminal assigns item numbers for event handling of manual orders MORD_00 - MORD_15.	Function not implemented in Operator Station.
194	I1_TR	user	11	–	The **I**ndication **TR**eatment **1** terminal assigns terminal numbers for event handling of changes in IND1.	–

Terminal Description, Event treat (Continued)

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
195	I2_TR	user	13	–	The **I**ndication **TR**eatment **2** terminal assigns terminal numbers for event handling of changes in IND2.	–
235	RP1_CTRL	user	H'FFFF	–	Every bit of the value **R**e**P**eat **C**on**TR**oL error in the corresponding bit of the IND**1**.	Uses the same bit-table as I1_EVBLK.
236	RP2_CTRL	user	H'FFFF	–	Every bit of the value **R**e**P**eat **C**on**TR**oL error in the corresponding bit of the IND**2**.	Uses the same bit-table as I2_EVBLK.
198	PROC_SEC	user	0	I(r/w)	**PROC**ess **SEC**tion is used for sectioning the alarm handling. Section numbers 1-16. 0=no sectioning. The signal may be presented in lists –1=the signal cannot be selected and cannot be presented in lists.	–
199	CLASS	user	0	I(r/w)	**CLASS** subdivides process section. Used by status list function in Operator Station.	–

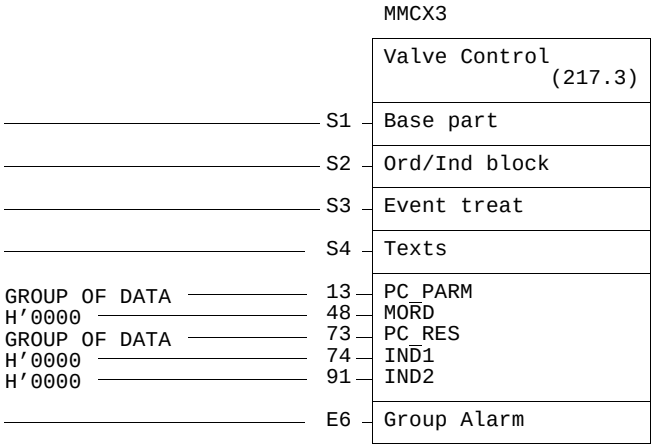
Texts



Terminal Description, Texts

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
187	LSOPNTXT	user	–	–	**TeXT** to be presented when **LSOPN** input of the PC element is TRUE.	Max. 10 characters.
188	LSCLSTXT	user	–	–	**TeXT** to be presented when **LSCLS** input of the PC element is	Max. 10 characters.
190.239	IC1_TXT	user	–	–	**TeXT** to be presented when **IC1** input of the PC element is TRUE.	Highest priority. Max. 17 characters.
190.240	IC2_TXT	user	–	–	**TeXT** to be presented when **IC2** input of the PC element is FALSE.	Max. 17 characters.
190.241	IB1_TXT	user	–	–	**TeXT** to be presented when **IB1** input of the PC element is FALSE.	Max. 17 characters.
190.242	IB2_TXT	user	–	–	**TeXT** to be presented when **IB2** input of the PC element is FALSE.	Max. 17 characters.
190.243	IB3_TXT	user	–	–	**TeXT** to be presented when **IB3** input of the PC element is FALSE.	Max. 17 characters.
190.244	IB4_TXT	user	–	–	**TeXT** to be presented when **IB4** input of the PC element is FALSE.	Max. 17 characters.
190.245	IA_TXT	user	–	–	**TeXT** to be presented when **IA** input of the PC element is FALSE.	Lowest priority. Max. 17 characters.

PC Connections



Terminal Description, PC Connections

Terminal No	Terminal Name	Value entered by	Default value	PC connection data type	Description	Remarks
13	PC_PARM	system	–	A32(r/w)	The **PC PAR**a**M**eters terminal contains group data to be connected to the PARAM terminal of the VALVECON PC element.	–
48	MORD	dialog/PC	–	I(r/w)	Group data for **M**anual **ORD**ers from the operator. Connected to the RMORD terminal of the VALVECON PC element.	–
73	PC_RES	PC	–	A12(r/w)	The **PC RES**ult terminal contains group data to be connected to the RESULT terminal of the VALVECON PC element.	–
74	IND1	PC via PC_RES	–	I(r/w)	The **IND**ication **1** terminal contains status indications received via PC_RES from PC.	–
91	IND2	PC via PC_RES	–	I(r/w)	The **IND**ication **2** terminal contains status indications received via PC_RES from PC.	–

Appendix A Business Unit Specific Data Base Elements

There are no descriptions of the ”business unit specific data base elements” in this document. There are only references in the table of contents to this appendix.

The ”business unit specific data base elements” are **NOT** included in the section ”Data Base Elements Listed in Functional Groups” in the Introduction.

The ”business unit specific data base elements” can be listed in the following functional groups:

Elements for Master Safeguard

See documentation (*Data Base Elements Safeguard 3000 Reference Manual* and *Functional Units Base Functions Safeguard 400 Series Reference Manual*) supplied by ABB Industri AS, Norway.

- FD
- FI
- FINC
- FINO
- FISM
- GI
- GISI
- MM_DESCR
- NODE_DESCR
- OS_DESCR.

Elements for DCU20 and DCU30

See documentation supplied by ABB Industrial Systems, Sweden, Division General Plants.

- DCU
- IRB
- RCGA
- RCGD
- TIME_DI
- TIME_DI.



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